10th Annual Capitol Graduate Research Summit

February 14, 2013

Featuring Graduate Student Research from:

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

Presenters and Poster Titles

Kansas State University

Feraidon Ataie   UTILIZATION OF HIGH LIGNIN RESIDUE ASH (HLRA) IN CONCRETE MATERIALS

Katie Burke   MEASURING GULLY EROSION IN TWO DISTURBED KANSAS LANDSCAPES

Kelly Foster   BOVINE VIRAL DIARRHEA VIRUS TRANSMISSION FROM PERSISTENTLY INFECTED CATTLE TO NON-PERSISTENTLY INFECTED CATTLE WHEN COMMINGLED: AN EVALUATION OF SERUM NEUTRALIZING ANTIBODY TITERS

Michael Gibson   PHYSICAL AND PROCESSING DIFFERENCES BETWEEN BAKED AND EXTRUDED PET FOODS

Michael Joseph   NOVEL DELIVERY MECHANISM FOR NUTRITION USING SORGHUM BASED EXTRUDED PRE-COOKED "BEANS"

Marcie Lechtenberg   Assessing the Adolescent Experience of Mindfulness

Tanner Miller   COMPARISON OF GAMITHROMYCIN, TILMICOSIN AND TULATHROMYCIN: METAPHYLACTIC TREATMENTS IN HIGH RISK CALVES FOR BRD

Vahid Rahmani   ABRUPT RAINFALL CHANGE DETECTION IN KANSAS

Tera Rooney Barnhardt   IMPLEMENTATION OF INDUSTRY-ORIENTED ANIMAL WELFARE AND QUALITY ASSURANCE ASSESSMENT TOOLS IN COMMERCIAL CATTLE FEEDING OPERATIONS

University of Kansas

Chelsie Bright   GOT ID? AN ANALYSIS OF KANSAS' VOTER ID LAW

Kevin Colbert   DEVELOPMENT OF A PROCINE MODELTO CHARACTERIZE THE WOUND HEALING OF TRANSCUTANEOUS OSSEOINTEGRATION PROSTHESES

Charlie Fehl   TARGETING SEX HORMONE PRODUCTION AT THE SOURCE – NEXT–GENERATION THERAPEUTICS FOR PROSTATE AND BREAST CANCERS

R. Hunter Harlow   EMPLOYMENT OF NON-TRADITIONAL TECHNIQUES TO IMPROVE STRATIGRAPHIC CORRELATION OF THE HIGH PLANS SUCCESSION AND THEIR APPLICATIONS FOR FUTURE GROUNDWATER MANAGEMENT

Griffin Roberts   INTEGRATED APPROACH TO ALGAL BIOFUELS: OVERCOMING CHALLENGES FOR NEW INDUSTRY

Lei Shi   MULTICHANNEL SENSE-AND-AVOID RADAR FOR SMALL UAVS

Benjamin Wolfe   MEASURING THE EFFECTIVENESS OF INTERDISCIPLINARY FIELD STUDIES FOR GENERAL STUDENT POPULATIONS AT COMMUNITY COLLEGES

University of Kansas Medical Center

Stephanie Bishop A CLICK CHEMISTRY-MEDIATED APPROACH TO UNDERSTANDING SURVIVIN: CASPASE-9 PROTEIN-PROTEIN INTERACTIONS

Marlene Pietrocola NURSE EXECUTIVES' PERCEPTIONS OF THE BARRIERS ASSOCIATED WITH REACHING AN 80% BACCALAUREATE PREPARED NURSING WORKFORCE IN RURAL KANSAS BY THE YEAR 2020

Lauren Ptomey AN INNOVATIVE WEIGHT LOSS PROGRAM FOR ADOLESCENTS WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES

Lei Qiu THE HISTONE DEMETHYLASE JMJD2B REGULATES GENES THAT CONTRIBUTE TO OVARIAN CANCER METASTASIS

Natalie Tarbutton & Alison Nuttle RETROSPECTIVE CHART REVIEW OF DISTRESS AMONG CANCER SURVIVORS

Joseph Brungardt	THE ROLE OF PALLADIN IN METASTATIC CANCER AS IT AFFECTS ACTIN BINDING, BUNDLING, AND POLYMERIZATION
Laina M. Burdiek	A NORMATIVE STUDY ON WIDEBAND TYMPANOMETRY AND ENERGY REFLECTANCE IN HUMAN EARS: EFFECTS OF REPETITIVE MEASUREMENTS
Karin Hampton Cernik	DO EPISTEMOLOGICAL BELIEFS AND WAYS OF KNOWING PREDICT REACTIONS TO A CHILD WITH ASPERGER SYNDROME?
Michelle Dreiling	BEYOND ANNIE OAKLEY: AN ANALYSIS OF TV'S PORTRAYAL OF MARKSWOMEN
Jo Jardina	ARE E-TEXTBOOKS THE EDUCATIONAL TOOLS OF THE FUTURE?
David Libby	DISTRACTED WHILE DRIVING: A COMPARISON OF THE EFFECTS OF TEXTING AND TALKING ON A CELL PHONE
Vishal Nageshkar	SPLITTING WATER MOLECULES VIA CONDUCTIVE NANOMATERIALS FOR HYDROGEN PRODUCTION
Dustin Smith	COMBAT IDENTIFICATION TRAINING USING AN AUGMENTED REALITY LEARNING SYSTEM
Fernando Valenzuela	STATISTICAL ANALYSIS TO ESTABLISH THE RELATIONSHIP BETWEEN RADIATION CONSUMPTION AND ENERGY USE FOR MEDICAL X-RAYS

UTILIZATION OF HIGH LIGNIN RESIDUE ASH (HLRA) IN CONCRETE MATERIALS

Feraidon F. Ataie and Kyle A. Riding
Department of Civil Engineering, Kansas State University

h lignin residue (HLR) is documented. HLR, a byproduct of bioethanol production from corn stover, is actually dilute acid pretreated and enzymatic hydrolyzed corn stover. Based on heat of hydration, calcium hydroxide consumption, and compressive strength experiments, it was concluded that the ash produced by burning HLR is a very reactive pozzolanic material that can be used as a partial replacement of cement in concrete materials. Thus, HLR which are byproducts of biochemical conversion of AR can be utilized as valuable materials for CSMs production for concrete.

MEASURING GULLY EROSION IN TWO DISTURBED KANSAS LANDSCAPES

Katie Burke
Department of Environmental Planning and Design, Kansas State University

Gully erosion creates human safety hazards, soil loss, and sediment and nutrient pollution. Gullies often form as a result of land use changes and interrelated factors such as soil compaction, vegetation removal and reduced rainwater infiltration. Kansas has deep, erodible soils, sporadic intense rainfall events, and heavy agricultural land management that usually increase the chance for gully erosion. This presentation describes a study of gully process in two types of heavily-used landscapes in Kansas – military training areas and agricultural fields. In both settings, heavy machinery alters the land surface, often leaving it exposed and unprotected from rainfall. My research goal is to understand gully erosion in order to predict where gullies form and how they grow. My first project objective is to measure gully growth with surveying equipment. My second objective is to identify and evaluate environmental factors that might explain gully growth, such as soil characteristics, antecedent moisture conditions, vegetative cover, slope, and drainage area. With direct field measurements and environmental characteristic data, I will attempt to correlate rates of gully growth to driving environmental forces. I expect the data will show that intense rain events, steep slopes, large drainage areas and shrink-swell clay soils contribute to erosion, while higher vegetation densities slow erosion. Finally, I will design innovative, sustainable gully mitigation measures for military training lands and agricultural fields of the Midwest. My preliminary measurements show that gully erosion is complex and inconsistent, which is why a greater understanding of gully process in Kansas is needed.

, Daniel U. Thomson[1], *and Gary A. Anderson*[2]
[1]Department of Clinical Sciences, Kansas State University; [2]Department of Diagnostic Medicine/Pathobiology, Kansas State University

Worldwide, bovine viral diarrhea virus (BVDV) infects cattle of all ages causing huge economic loss due to ensuing morbidity and mortality. The objective of our study is to detect the presence of BVDV in cattle, following direct exposure to persistently infected (PI) cattle. Through funding from Kansas State Veterinary Diagnostic Laboratory, 53 cattle were introduced to 10 PI cattle and commingled for 27 days, becoming infected as early as 4 days post infection and maintaining infection for as long as 25 days. Serum and buffy coat samples were collected throughout the study and analyzed for the presence of BVDV nucleic acids via PCR. As demonstrated by positive buffy coat PCR, 50 of the
53 commingled cattle became transiently infected. Positive samples were submitted for genotype determination by 5' UTR sequencing. Serum neutralization assays (SN) were performed on serum collected prior to the commingling (Day -1) and on Days 8, 13, 20 and 27 to monitor seroconversion following infection. Analysis of SN and PCR data indicates that 100% of animals with no antibody titer on Day -1 became infected and seroconverted with high titer to at least one PI BVDV strain. Further analysis shows that animals with pre-existing SN antibody titers exhibited lower virus load and shorter viremia than their naïve counterparts. Among seropositive animals, those with the highest pre-existing SN titer exhibited lower virus load, shorter viremia, and were refractile to infection. Extrapolation of these field observations indicates the importance of proper immunization prior entry into the feedlot.

PHYSICAL AND PROCESSING DIFFERENCES BETWEEN BAKED AND EXTRUDED PET FOODS

Michael Gibson, *Greg Aldrich, and Sajid Alavi*
Department of Grain Science and Industry, Kansas State University

In 2011, U.S. pet food industry sold $19.85 billion of pet food. There is a predicted growth of sales in the pet food market. There are two major types of dry pet food processing baking and extrusion. This study focuses on the physical differences of a pet food produced by extrusion and baking processes. Three iso-nutritional diets were formulated for 0, 10, and 20% fresh meat (FM) inclusions. Each diet was extruded at 353 and 453 RPMs using a single screw extruder while a 30 foot experimental oven at 425 °F was used for baking. Proximate analysis confirmed kibbles were iso-nutritional post-processing. Products were measured for expansion ratio (ER), piece density (PD), peak crushing force (PF), starch gelatinization, and amylose-lipid complex (AL). As FM

inclusion increased (0 – 20%), ER decreased (4.1-3.5) for the 353 RPM and fluctuated for 453 RPM (2.7 – 3.7), while expansion for baked kibbles was not evident (0.96). With the absence of mechanical shear, PD was 56% higher in the baked product than the extruded product indicating higher compaction and lower ER. Texture analysis for baked kibbles displayed smooth texture curve-PF (3.4-2.7 kg) and extruded kibbles-PF (2.9-1.5 kg) displaying a serrated curve. Differential Scanning Calorimeter thermograms exhibited complete gelatinization for extruded kibbles while baked kibbles had lower gelatinization levels (32 - 45%). Extrusion processing's high gelatinization was attributed to the combination of thermal and mechanical energy leading to expansion and cell structures. The baking process showed reduced levels of gelatinization without any AL complexes.

NOVEL DELIVERY MECHANISM FOR NUTRITION USING SORGHUM BASED EXTRUDED PRE-COOKED "BEANS"

Michael Joseph[1], Akinbode Adedeji[1], Sajid Alavi[1], Eric Maichel[1], and Brian Plattner[2]
[1]Department of Grain Science and Industry, Kansas State University; [2]Wenger Manufacturing Inc., Kansas

This study was conducted to demonstrate an effective and novel nutrient delivery mechanism for humans by utilizing an alternate food crop, like sorghum. A novel pre-cooked bean-like product was manufactured using extrusion to overcome disadvantages associated with consumption of dry beans like hard to cook, flatulence, etc. The new product formulation consisted of a blend of sorghum, wheat and soy flours at different levels to achieve ideal functional and nutritional characteristics and was compared to navy beans. A low intensity extrusion with specific mechanical energy (SME) input between 27.4-36.5kJ/kg, led to partial gelatinization ranging from 54.1-93.6%. Pasting curves generated using Rapid Visco Analyzer showed absence of cold swelling, indicating minimal starch damage during extrusion. Instrumental texture analysis was used to standardize final product preparation to 2 hours of soaking followed by 30 minutes of cooking in boiling water, resulting in an absence of uncooked core and hardness (2814.2 ± 341.6 g force) comparable to that of cooked natural navy bean (2840.07 ± 302.8 g force). Product hardness was reduced through longer cooking times and with the inclusion of higher soy flour levels. Natural navy beans had significantly ($P<0.05$) different textural values (adhesiveness, cohesiveness, etc.) than the extruded product. All final product formulations had a water activity (a_w) below 0.61 which would lead to longer shelf life though these values were significantly ($P<0.05$) different from that of natural navy beans, which had a_w of 0.39.

Assessing the Adolescent Experience of Mindfulness

1

[1]Marriage and Family Therapy Program, Kansas State University; [2]Department of Special Education, Counseling and Student Affairs, Kansas State University

Mindfulness, a way of paying attention to the present moment with kindness and curiosity, is an ancient practice that is currently experiencing an upsurge of support. Medical experts, therapists, educators and corporate executives are touting the benefits of mindfulness interventions. Published research has shown mindfulness activities correlate with gains in emotional regulation, worksite stress, math anxiety, eating disorders, generalized anxiety disorder and a host of other illnesses and disorders. Only a few minutes of daily mindfulness practice help students to better focus and pay attention. This investigation explored an understudied aspect of mindfulness: the experience of ninth graders in a public school classroom in Kansas who practice a brief, daily mindfulness activity. The study utilized both qualitative and quantitative research methods. Transcribed interviews were analyzed using thematic analysis and the effect of classroom mindfulness was explored using the Child and Adolescent Mindfulness Measure (CAMM) with a

control and experimental group. Results indicated that adolescents soon overcome their initial awkwardness with mindfulness and found the experience consistently positive and appreciated the improved classroom environment. The experimental group scored significantly higher in perceived mindfulness on the CAMM instrument at post-test, while the control group scored significantly higher.

COMPARISON OF GAMITHROMYCIN, TILMICOSIN AND TULATHROMYCIN: METAPHYLACTIC TREATMENTS IN HIGH RISK CALVES FOR BRD

Tanner J. Miller[1], Daniel U. Thomson[1], Michael Hubbert[2], Clint Loest[3], and Chris D. Reinhardt[4]
[1]Department of Clinical Sciences, Kansas State University; [2]Clayton Livestock Research Center, New Mexico State University; [3]Department of Animal and Range Science, New Mexico State University; [4]Department of Animal Sciences and Industry, Kansas State University

The objective of this experiment was to compare the effects of three metaphylaxis antibiotics on health and performance of high risk feedlot cattle. Heifers ($n = 579$, 403.7 ± 27.4 lbs) from Southwest Texas were identified as being at high risk for BRD and shipped to the Clayton Livestock Research Center in Clayton, NM. Cattle were randomly allocated within truck load lots into treatment pens (30 pens; 3 treatments; 10 reps) which contained 18 to 20 animals per pen. Pens within arrival replicate were randomly assigned to receive one of three metaphylactic antimicrobial treatments based on the randomly assigned treatment for their pen within each replicate: 1) Gamithromycin (6.0 mg/kg; GAM), 2) Tilmicosin (13.3 mg/kg; TIL), and 3) Tulathromycin (2.5 mg/kg; TUL). Treatments were administered during initial post-arrival processing. Cattle were fed for 56 to 60 days. Daily gain (ADG), dry matter intake, morbidity, and mortality were recorded. Cattle administered TUL had 0.29 lb higher ADG than cattle administered GAM ($P < 0.01$) and had 0.18 lb ($P = 0.09$) higher ADG than cattle that received TIL. TUL treated cattle had ($P = 0.12$) improved feed efficiency compared to GAM treated cattle. Cattle that received TUL (5.2%) had lower morbidity rates ($P < .02$) than TIL (14.6%) and GAM (12.79%) treated cattle. There were no treatment differences in dry matter intake or mortality. The results of this study indicate that tulathromycin was most effective at mitigating the effects of BRD in feedlot heifers.

ABRUPT RAINFALL CHANGE DETECTION IN KANSAS

Vahid Rahmani and Stacy L. Hutchinson
Biological and Agricultural Engineering Department, Kansas State University

Precipitation has direct impacts on agricultural production, water resource management, and recreational activities. Thus understanding rainfall trends is important, especially for states like Kansas that experience a highly variable climate. The annual rainfall trends were analyzed using precipitation data from 1890 through 2011 from 24 long- term stations in Kansas. The overall analysis showed that on average western Kansas received 500 mm annual rainfall with a gradual increase of up to 1000 mm along the eastern border. In addition, a gradual increase was found in the state average total annual rainfall with a greater increase for recent years (1956 through 2011) and in the eastern part of the state. A change-point analysis was conducted to determine if the trend in increasing annual rainfall had an abrupt change. The Pettitt and CUSUM methods were used to detect the change points for all 24 stations. The Pettitt method detected a significant change-point in 12 stations and CUSUM detected a significant change -point in 9 stations. These stations were spread across the state with no special tendency. In addition, the change-points vary across the state, with the earliest one happened in 1939 for Lakin in southwest and the latest one happened in 1981 for Winfield in south, which emphasizes the rainfall variability across the state. The most significant change-point occurred in 1981 for Winfield. The majority of change-points were a start of an increase in the trend except for St. Francis, which had an increasing trend from 1908 to 1950 and a decreasing trend from 1951 to 2011.

IMPLEMENTATION OF INDUSTRY-ORIENTED ANIMAL WELFARE AND QUALITY ASSURANCE ASSESSMENT TOOLS IN COMMERCIAL CATTLE FEEDING OPERATIONS

Tera J. Rooney Barnhardt[1], Daniel U. Thomson[1], Daniel A. Frese[1], Shane B. Terrell[1], Darrel J. Rezac[1], Abby C. Jones[1], and Christopher D. Reinhardt[2]
[1]Department of Clinical Sciences, Kansas State University; [2]Department of Animal Sciences, Kansas State University

Consumer interest in production agriculture continues to prompt the beef industry to respond by developing tools to increase the accountability and transparency of management techniques within the industry. The purpose of this project was to demonstrate the ease of implementing an industry-oriented assessment, while recording useful data to show current practices within the cattle feeding industry. An assessment tool, developed by veterinarians, animal scientists and production specialists, was used to objectively evaluate key areas of beef cattle production such as animal handling, antibiotic residue avoidance, cattle comfort, food safety and others in commercial feedyards (n=56) that provide feed and care for 1,985,500 of the cattle on feed (one- time capacity) in the state of Kansas. Kansas State University personnel worked with cooperating feedyard personnel to complete the assessments. Nineteen of the 56 feedyards maintained current documentation of all management practices required by the assessment. During cattle handling observations, 78.5% of the feedyards performed at a level above passing according to the standards in the assessment. As an example, cattle handlers had to use an electric prod on only 3.98% of all cattle processed during observations. With respect to cattle comfort in the pen and feed bunks, 98% were considered acceptable; however, 25% of feedyards failed the water tank inspection. Implementation of this assessment will prove to be advantageous for management of employees while increasing consumer confidence in how cattle are handled and housed in cattle feeding operations using Kansas as a model for the rest of the beef industry.

GOT ID? AN ANALYSIS OF KANSAS' VOLTER ID LAW
Chelsie Bright
Department of Political Science, The University of Kansas

In the spring of 2011, Kansas passed a law requiring all voters to show photo-identification when voting. County clerks were tasked with informing voters about how this new law would affect the 2012 election. Some clerks used advertising materials that stress the fact that voters must have photo identification to be allowed to vote. Other clerks produced materials assuring voters that their votes will be counted, via the provisional balloting process, even if they do not have approved photo-identification. There have been concerns that voter identification laws could reduce election turnout. How these new laws are advertised may play a key role in the number of registered voters turning out to vote. Our research compares the requirement-focused advertising with the advertising assuring voters that all votes will be counted, and assesses the impact that each advertising strategy has on turnout. Some counties in Kansas sent voters requirement-focused advertisements, some sent "all votes will count" advertising, and some provided no information to voters. This variance creates a natural experiment, allowing us to assess the impact of advertising on turnout in the 2012 election. Employing a quasi-experimental design, we compare precinct-level turnout data from counties using both advertising strategies. Precincts in counties with no advertising are used as a baseline, allowing for a clear assessment of the impact of advertising. The results of our analysis will provide policy relevant information to both local and state public officials in the state of Kansas.

DEVELOPMENT OF A PROCINE MODELTO CHARACTERIZE THE WOUND HEALING OF TRANSCUTANEOUS OSSEOINTEGRATION PROSTHESES
Kevin Colbert
Department of Bioengineering, The University of Kansas

One quarter of the 1.7 million US lower limb amputees consider their quality of life to be poor to extremely poor because of soft tissue sweating, irritation, and sores associated with their socket-stump artificial limb. A surgical method has been developed in Europe to circumvent the noted soft tissue problems by redirecting ambulatory forces back to the skeleton using an implant that is permanently fixed through the skin (transcutaneous) to enable direct bone anchorage of a prosthetic leg. This research develops a porcine model to study the wound healing of transcutaneous prosthetics by characterizing infection concerns. This is the first known animal model with similar skin characteristics to the human condition in which an axially-loaded, weight-bearing implant is used. An amputation and implantation of a transcutaneous device was performed on two pigs. The implant and prosthesis were designed and manufactured in house. Bacterial swabs of skin cultures are being examined at regular time points over an eight week period. Soft tissue biopsies and histology will be done post-mortem to quantify soft tissue adherence and infection near the wound site. The information obtained about how the wound heals around the implant will be translated to help better regulate infection concerns in the human implantations. This study shows promise that in the near future, US amputees could see an improved health related quality of life via transcutaneous prosthetics.

TARGETING SEX HORMONE PRODUCTION AT THE SOURCE – NEXT – GENERATION THERAPEUTICS FOR PROSTATE AND BREAST CANCERS

Charlie Fehl, Natasha DeVore, Elyse Petrunak, Emily Scott, and Jeffrey Aubé
Department of Medicinal Chemistry, The University of Kansas

Hormones such as testosterone and estrogen are powerful stimulators of cellular growth and survival, and certain cancers (prostate, breast cancers) have exploited these molecules to enhance tumor progression. Between 2011-2012, prostate and breast cancers that progressed to the metastatic stage were the second most prevalent causes of cancer-related deaths in US men and women, respectively. The key player in the cellular production of both sex hormones is Cytochrome P450 17A1. This drug target has been characterized using X-ray crystallography, the technique that won the 2012 Nobel Prize in chemistry, allowing it to be closely examined for drug discovery. The challenge in developing useful therapeutics for this target lies in correctly blocking its bioactivity. A certain reaction of this protein is essential for proper cellular functioning, which is shown to have use-limiting side effects akin to traditional chemotherapeutics. However, its second reaction has been clinically shown to be a precise objective for the treatment of prostate cancer with significantly lower potential for toxicity, offering an opportunity to develop uniquely selective treatments. Our laboratories currently use chemistry and structural biology to properly target this protein with application to prostate cancer, but analogous work will later be applied to novel breast cancer therapeutics.

EMPLOYMENT OF NON-TRADITIONAL TECHNIQUES TO IMPROVE STRATIGRAPHIC CORRELATION OF THE HIGH PLANS SUCCESSION AND THEIR APPLICATIONS FOR FUTURE GROUNDWATER MANAGEMENT

R. Hunter Harlow, *Greg A. Ludvigson, Jon J. Smith, John H. Doveton, Michael Petronis, Luis A. Gonzalez*
Department of Geology, The University of Kansas & Kansas Geology Survey

Stratigraphic investigation of the High Plains Succession (HPS) in western Kansas (Neogene Ogallala Formation and overlying, undifferentiated units) has been deficient due to lack of outcrops, regional marker beds, and its unconsolidated nature. These obstructions are significant because they have limited the reliability of stratigraphic correlations in the High Plains aquifer, the most important regional aquifer in the United States for agricultural production. Without reliable stratigraphic correlations, the characterization of hydrogeologic properties of aquifer materials and predictive models for the management of remaining groundwater resources have significant uncertainties. Due to the highly variable lithologic nature of the HPS, non-traditional stratigraphic analysis offers the promise of improved correlations; these approaches include paleoclimatology, geochemistry, and alluvial sequence stratigraphy. With state-of-the-art rotary-vibratory and hydraulic piston coring technology, we have recovered the first-ever intact drill core (HP1A) of the HPS in Haskell County of southwestern Kansas for such analysis. Chemostratigraphic results show a systematic relationship between bulk sedimentary organic matter (SOM) $\delta^{13}C$ and pedogenic carbonate $\delta^{13}C$ and $\delta^{18}O$ related to biomass changes and paleoclimate variability; additionally, the fine-scale chemostratigraphic structure offers prospects for future regional correlations. HP1A sedimentary facies associations and fluvial aggradational cycle (FAC) stacking patterns reveal seven FAC-sets and one complete fluvial sequence. FAC-set boundaries and fluvial sequence boundaries have the potential to be regionally correlatable datums. Five additional cores are planned and, together, their high-resolution paleoclimatic and depositional interpretations may prove useful for future regional correlations and allow for improved stratigraphy of the High Plains aquifer and better water management.

INTEGRATED APPROACH TO ALGAL BIOFUELS: OVERCOMING CHALLENGES FOR NEW INDUSTRY

Griffin Roberts[1], Marie-Odile Fortier[2], BelindaSturm[2], Susan Stagg-Williams[1]
[1]Department of Chemical and Petroleum Engineering, The University of Kansas;
[2]Department of Environmental Engineering, The University of Kansas

In recent decade significant resources (state and federal) has been feeding research into algal biofuels driven by the Renewable Fuel Standard and aspirations of energy independence. Significant challenges have been identified across the board from cultivation strategies to conversion technologies by the National Academy of Sciences and multiple national lab studies. The main areas of concern include water, land and nutrient use with lipid productivity rates. This multidisciplinary work demonstrates an integrated wastewater algae-to-biocrude process which begins to overcome these challenges; leading to a more promising pathway for an emerging algal biofuel industry. Algae has been cultivated in pilot scale growth reactors using the Lawrence, KS municipal wastewater effluent as nutrient source and converted to a carbon-rich biocrude (comparable to heavy petroleum crude) through hydrothermal technology. Wastewater cultivation is a viable strategy eliminating nutrient concerns of cost and competition with agriculture. Hydrothermal processing uses subcritical (hot, compressed) water chemistry to convert wet whole algae to crude oil replacement; eliminating need for high lipid productivity while minimizing cost and energy demand of typical biofuels like biodiesel and renewable diesel. Compared to conventional fertilized grown algae the integrated approach herein gives unique algal characteristics (low carbon and lipid; high ash and oxygen), and produces superior biocrude (high conversion rate, energy content, carbon, and hydrogen with low oxygen). On an organic basis, biocrude yield was 45% (31% above initial lipid content) with significant production of solid and liquid co-products. Beneficial properties of co-products can significantly increase the entire value chain of the process.

MULTICHANNEL SENSE-AND-AVOID RADAR FOR SMALL UAVS
Lei Shi
Department of Electrical Engineering and Computer Science, The University of Kansas

Several tasks exist where routine aerial surveys could provide invaluable information, such as an aerial view of a farmer's crops to strategically allocate resources. Unfortunately, limitations on expenses, pilots, and aircrafts often make scenarios such as this extremely impractical. These tasks however could be performed by an unmanned aerial vehicle (UAV) and at the University of Kansas collaborative research is underway to create such an UAV. Lead by Dr. Chris Allen (department of Electrical Engineering), research is underway to design and create a miniature air-collision avoidance radar that would be mounted inside an UAV and allow the UAV to safely fly itself in unknown or crowded airspace. This radar system will continuously search for flight hazards up to a mile away in a 360° viewing angle around the aircraft and provide 10 updates a second to an autopilot. The complexity of this research due to limited space, payload and the need for real-time signal processing has gained recognition with NASA and is recently funded as part of NASA's LEARN (Leading Edge Aeronautical Research for NASA) program. This research is recognized to have many foreseeable military and civilian applications and is a leading edge aerospace technology that would reassert Kansas as the air-capitol of the world. On a nationwide scale, this radar system could even be incorporated into the FAA's NextGen air-traffic control system for 'even more proactive prevention of accidents and advanced safety management'.

MEASURING THE EFFECTIVENESS OF INTERDISCIPLINARY FIELD STUDIES FOR GENERAL STUDENT POPULATIONS AT COMMUNITY COLLEGES

Benjamin Wolfe

Department of Educational Leadership and Policy Studies, The University of Kansas

Two-year colleges and open-access institutions face a struggle in teaching college level science curriculum to often under-prepared students, many of whom require developmental course work in English, reading, and mathematics. Most of these students are non-science majors pursuing general education course work for transfer to four-year schools. Many approach the sciences with pre-conceived negative attitudes and low self-confidence. The challenge is to make science stimulating and engaging for these students. This study measures the effectiveness of an interdisciplinary science field study at a large urban Midwestern community college. Using interviews and student experience surveys, this study measures student confidence and attitudes of science, comparing students participating in interdisciplinary field studies with students enrolled in a traditional introductory geology lecture course. Student participants in the field study reported positive feelings towards science-related topics and a greater understanding of the relationship between fields of science after the trip. They reported increased confidence in practicing science they previously thought they couldn't do. Student participants in the field study also conveyed increased interest in pursuing science related degrees at transfer institutions. Our findings show interdisciplinary field studies actively engage students in scientific inquiry. Such activities illustrate links between fields of study and they provide students with greater positive, successful experiences with science as compared to traditional science lecture courses. Our results suggest interdisciplinary field study activities will result in greater scientific literacy and an increase in the pursuit of science, technology, engineering and mathematics (STEM) degrees at transfer institutions.

A CLICK CHEMISTRY-MEDIATED APPROACH TO UNDERSTANDING SURVIVIN:CASPASE-9 PROTEIN-PROTEIN INTERACTIONS

Stephanie C. Bishop and *Jed N. Lampe*
University of Kansas Medical Center, Kansas City, Kansas

Survivin is a small protein that, as its name implies, helps cells survive. It accomplishes this by preventing programmed cell death, or apoptosis, a normal process that maintains organism homeostasis, or balance. Because survivin is anomalously overabundant in numerous types of tumors, survivin overwhelms the homeostatic apoptotic mechanisms and cancer cells survive. Consequently, survivin has been targeted for new anti-cancer therapeutics. Existing inhibitors, however, lack efficacy. A new therapeutic strategy, specific inhibition of survivin binding to its protein partner caspase-9, would help tumor cells undergo apoptosis. To develop inhibitors of the survivin:caspase-9 interaction, we are using site-directed mutagenesis coupled with click chemistry to site-specifically label the survivin protein with a fluorescent tag. This technology enables us to monitor changes in fluorescence intensity, which leads to the determination of intra- and inter-molecular distance measurements. Collectively, these measurements facilitate computer-generated modeling of that specific protein-protein interaction. This computer- generated model of the molecular architecture required for the survivin:caspase-9 interaction will facilitate the rational, *de novo* design of small molecule inhibitors of this critical interaction. An understanding of the previously-elusive molecular architecture of specific protein-protein interactions will facilitate design of inhibitors with improved efficacy, selectivity, and affinity, leading to better safety profiles, fewer off-target interactions, and improved patient outcomes, not only within the cancer sphere but also for patients suffering from other diseases. Our novel approach merging site-directed mutagenesis with click chemistry to monitor protein-protein interactions holds untapped potential to improve rational drug design for myriad human diseases.

NURSE EXECUTIVES' PERCEPTIONS OF THE BARRIERS ASSOCIATED WITH REACHING AN 80% BACCALAUREATE PREPARED NURSING WORKFORCE IN RURAL KANSAS BY THE YEAR 2020

Marlene Pietrocola, MSN, MBA, RN, NEA-BC
University of Kansas Medical Center, Kansas City, Kansas

Background: The Institute of Medicine (IOM) recommends that 80% of the Registered Nurses (RN) in the workforce be baccalaureate prepared by the year 2020. Nurses in rural communities continue to face obstacles in obtaining a baccalaureate degree. This study intends to explore the perceptions of nurse executives in rural Kansas about the perceived barriers to reaching an 80% Registered Nurse with a Bachelor's degree (BSN) workforce by the year 2020. **Methodology:** This study will use mixed-methods including quantitative descriptive data from select rural hospital in Kansas, including the current RN educational staffing mix and the qualifications of the nurse executives in these hospitals. Qualitative data will be obtained by open-ended, semi- structured interviews with the nurse executives of these hospitals. The interviews will be audio– recorded and transcribed verbatim. The quantitative data will be analyzed using descriptive statistics and the qualitative data will be analyzed using a qualitative content analysis of patterns and themes that emerge in the narrative content. **Sample:** A purposive sample of nurse executives will be recruited from select hospitals in rural communities in Kansas. **Relevance for Kansas:** There is a lack of data about the barriers that contribute to a shortage of baccalaureate prepared nurses in rural Kansas hospitals. This study proposes to document the current RN educational preparation in select rural Kansas hospitals and the perceived barriers of Nursing Executives in reaching the IOM recommendations. This information is essential to the future development of delivering a safe and qualified nursing workforce for Kansas communities.

AN INNOVATIVE WEIGHT LOSS PROGRAM FOR ADOLESCENTS WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES

Lauren T. Ptomey[1], Joseph E. Donnelly[2], Jeannine R. Goetz[1,] Debra K. Sullivan[1]:
[1]Department of Dietetics and Nutrition, [2] Cardiovascular Research Institute, Department of Internal Medicine, Cardiovascular Research Institute; University of Kansas Medical Center, Kansas City, KS

Introduction: Adolescents with intellectual and developmental disabilities (IDD) are at an increased risk of obesity with up to 55% considered overweight and 31% obese. The purposes of this study were to compare the effectiveness of two weight loss diets, an enhanced stop light diet (eSLD) and a conventional diet (CD) diet, and to determine the feasibility of using tablet computers as a weight loss tool in overweight and obese adolescents (11-18 yrs.) with IDD. **Methods:** A 2-month pilot intervention was conducted. All participants were randomized to the eSLD or CD, and were given a tablet computer which they used to track daily dietary intake and physical activity. They met weekly with a health educator over facetime video chat on the tablet computer where they received dietary and physical activity feedback and education. **Results:** 15 participants (47% female, mean age 14.9 ± 2.3 yrs.) were randomized and completed the intervention (8 eSLD, 7 CD). Participants in the eSLD lost significantly more weight than participants in the CD group (-3.4 ± 1.7 kg vs. -1.9 ± 0.8 kg; p=0.04). Participants were able to use the tablet computer to track their dietary intake 81.5% of the time, track their physical activity 61.6% of the time, and attended 76.7 % of facetime meetings. **Conclusions**: The eSLD appears to be a more effective than a CD for weight loss in adolescents with IDD and the use of tablet computers appears to be a feasible tool to deliver a weight loss intervention in adolescents with IDD.

THE HISTONE DEMETHYLASE JMJD2B REGULATES GENES THAT CONTRIBUTE TO OVARIAN CANCER METASTASIS

Lei Qiu[1,2], Yan Hong[1], Jake New[3], Ying Mu[1], Adam Krieg[1]
[1]Department of Obstetrics and Gynecology, [2]Department of Pathology and Laboratory Medicine, University of Kansas Medical Center, Kansas City, KS, USA; [3]Kansas State University, Manhattan, KS, USA

In 2008, the Centers for Disease Control and Prevention revealed that ovarian cancer patients in Kansas had a mortality rate of 72-76%. Although the overall incidence of ovarian cancer in Kansas was below the U.S. average (11 per 100,000 people vs. 12.2 per 100,000 people), the death rate in Kansas was higher (8.2 per 100,000 people, versus the national range of 4.4-9.6 per 100,000 people). The high death rate from ovarian cancer is the result of its late diagnosis, frequent metastasis, and rapid recurrence. We have determined that the histone demethylase JMJD2B increases expression of genes promoting tumor growth and metastasis. Our studies have shown that JMJD2B is abundantly expressed in several ovarian cancer cell lines. Immunohistochemical studies have also shown that JMJD2B expression is greater in ovarian serous adenocarcinoma compared to that in normal ovaries or benign ovarian masses. Microarray analysis revealed several pathways that were differentially regulated by JMJD2B in various oxygen levels. Pathways involved in inflammatory response and metastasis were strongly influenced by JMJD2B expression under hypoxia. Since inflammation and tumor metastasis are linked, we believe that studying the pathways regulated by JMJD2B could improve current ovarian cancer therapies in the State of Kansas.

RETROSPECTIVE CHART REVIEW OF DISTRESS AMONG CANCER SURVIVORS

Natalie Tarbutton, Alison Nuttle, *Katherine Killingsworth, Carly Goodwin, Philip Twumasi-Ankrah, Lisa Van Hoose, Dory Sabata, Rhonda Johnson*
University of Kansas Medical Center

The National Comprehensive Cancer Network (2012) explains that distress can occur across the cancer continuum. Current guidelines suggest all patients should be screened for distress at initial visit, at appropriate intervals, and as clinically indicated if there are changes in disease status (NCCN, 2012). The purpose of this study is to identify distressing factors, which are predictive of overall distress throughout the continuum of cancer care.

Using a retrospective design, researchers reviewed distress ratings (n=6032) for people receiving outpatient care at KUCC from 2005-2009 to describe the relationships between distress factors and predictability of high distress. The Distress Thermometer includes a rating scale and problem list related to one of five domains: practical, relationship, emotional, spiritual or physical (Fulcher & Gosselin-Acomb, 2007). Problem list domains are addressed by specific items totaling 36 problems (7-practical, 3-relationship, 5-emotional, 2-spiritual, and 19-physical). A binary logistic regression model was fit to the data to determine the character and intensity of risk of high distress associated with persons and explainable by their responses on the items list of distressing factors.

Statistical evaluation of the 36 problem items revealed that 17 items on the screening tool significantly affected distress scores. Persons who responded yes to worry were 2.93 times more likely to be in the high distress group. This poster provides new knowledge about factors that place cancer patients at higher risk of distress. The variability of the domains contributing to distress suggests that an inter-professional approach to cancer care is vital to addressing different needs.

THE ROLE OF PALLADIN IN METASTATIC CANCER AS IT AFFECTS ACTIN BINDING, BUNDLING, AND POLYMERIZATION

Joseph Brungardt, and Moriah R. Beck
Department of Chemistry, Wichita State University

The phosphorylation of palladin, a recently discovered actin binding protein, has been shown to play a role in the regulation of cancerous cell motility. The initial discovery of palladin came when it was seen to be upregulated in invasive metastatic cancer cells. Upon isolation of the protein, the C-terminal immunoglobulin (Ig) domains of palladin proved to be those directly involved in its interaction with filamentous actin (F-actin). In the past two years, research has indicated that palladin is regulated by the kinase Akt1, which is involved in inhibiting apoptosis and promoting tumor initiation. Akt1 phosphorylates palladin at a linker region between domains Ig3 and Ig4. Cell-based assays suggest that this phosphorylation event increases the F-actin crosslinking or bundling activity of palladin. The work presented here quantifies this difference between phosphorylated and non-phosphorylated domains through the *in vitro* assays of F-actin bundling and binding co-sedimentation as well as fluorescence microscopy. Initial work indicates that no difference exists between the wild type and mutants abilities to bind actin. However, our results indicate a detectable difference between the bundling abilities of wild type and phosphorylated Ig34 at low concentrations. These initial results corroborate earlier cell-based findings. Furthermore, studies done under non-polymerizing conditions show that the Ig domains of palladin also induce polymerization of monomeric actin, which is verified by fluorescence microscopy and kinetic assays. This work allows for further understanding of the dynamic actin structure and the role palladin plays, phosphorylated or not, in its regulation within healthy and cancerous cells.

A NORMATIVE STUDY ON WIDEBAND TYMPANOMETRY AND ENERGY REFLECTANCE IN HUMAN EARS: EFFECTS OF REPETITIVE MEASUREMENTS

Laina M. Burdiek, and Xiao-Ming Sun
Department of Communication Sciences and Disorders, Wichita State University

The middle ear transforms airborne sounds into mechanical vibration and helps improve sound transmission into the fluid-filled inner ear. This is an imperfect process. Part of the sound energy is reflected back to the ear canal due to acoustic impedance mismatch. A new technique— wideband energy reflectance (ER), has been developed to evaluate the middle-ear function. It determines the proportion of reflected energy and gives information for a broad frequency range, an advantage over the conventional single-frequency tympanometry in audiology. ER can be measured at the ambient pressure (aER) and expressed in energy absorbance (EA = 1–ER). Wideband tympanometry has been introduced to measure EA with the air pressure varied in the ear canal. Previous studies observed that repeated testing of low-frequency tympanometry altered outcomes. The object of the present study was to investigate the effect of repetitive measurements of wideband tympanometry on EA. Seventeen adults with normal hearing and middle-ear function were recruited. Eight wideband tympanometry tests were consecutively performed in between two aER tests. Data revealed that successive testing of wideband tympanometry resulted in a frequency-specific change of EA. The EA increased below 1.5 kHz, deceased from 1.5 to 3 kHz, and decreased again at 5 to 6 kHz. This study has shown, for the first time, a statistically significant effect of repeated tympanometry on EA. Results suggest that this effect should be taken into account, or be minimized, to increase validity when repetitive wideband tympanometry is required in applications, for instance, in test-retest reliability studies.

DO EPISTEMOLOGICAL BELIEFS AND WAYS OF KNOWING PREDICT REACTIONS TO A CHILD WITH ASPERGER SYNDROME?

Karin Hampton Cernik, and Marlo Schommer-Aikins
Department of Education, Wichita State University

This study explored the relationship between epistemological beliefs, ways of knowing, parenting styles, and how one reacts to a child with Asperger Syndrome acting out in public. The purpose was to determine if epistemological beliefs, ways of knowing, and/or parenting style predict how an individual would respond in such a situation. Epistemological beliefs, or beliefs about the nature and source of knowledge, looked at were certain knowledge and omniscient authority. Ways of knowing were classified as connected knowing (perspective taking) and separate knowing (devil's advocate), and reflect the relationship between the knower and the object or subject of knowing. Parenting styles reflect the parents' use of demanding behavioral compliance as a method to integrate the child into the family and society, and were categorized as authoritarian, authoritative, and permissive. Two hundred and nine college students between the ages of 19 and 55 participated in the study. The participants completed questionnaires to determine their epistemological beliefs, connected or separate knowing, and parenting style, and demographic questions. They then responded to a scenario involving a child with Asperger Syndrome. People who gave appropriate advice had higher scores in connected knowing than people who gave inappropriate advice, suggesting that higher levels of connected knowing lead to more appropriate reactions to such situations. An ancillary analysis revealed that authoritative parenting, separate knowing, and certain knowledge are related to connected knowing. Future research is suggested to explore those relationships.

BEYOND ANNIE OAKLEY: AN ANALYSIS OF TV'S PORTRAYAL OF MARKSWOMEN

Michelle Dreiling, Patricia Dooley, and Deborah Ballard-Reisch
Department of Elliott School of Communication, Wichita State University

Media portrayals influence how women are perceived in society. Historically, women have often been chastised or punished for exhibiting skills and attributes, which are perceived as masculine. Some reality television series seem open to portraying women in roles, which have historically been considered inappropriate for them. Nevertheless, can appearance be deceiving? Could these seemingly open portrayals really be masking misogynistic undertones? The purpose of this study is to discern whether the History Channel's television series Top Shot provides a misogynistic representation of female markswomen and whether female contestants are marginalized due to gender. This study also explored the possibility of gender-biased casting, through a comparison of available data on gender ratios of marksmanship in the military, law enforcement, competition shooting, and hunting sectors, compared with ratios expressed on the show. These sectors are explicitly represented in the series; therefore, a comparison of available data on gender ratios showed a relative discrepancy between the show and reality. A content analysis determined how closely the show's representation of markswomen matches that of reality, and thematic analysis of fan comments determined whether female contestants appeared marginalized.

ARE E-TEXTBOOKS THE EDUCATIONAL TOOLS OF THE FUTURE?

Jo Jardina, and Barbara Chaparro
Department of Psychology, Wichita State University

Many schools and universities are starting to offer e-Textbooks in place of traditional paper textbooks. E-Textbooks are offered via a variety of reader applications, each having its own user interface for page navigating, search, annotation, and highlighting of text. This study investigated the efficacy of two e-Textbook reader applications, Kindle and Inkling, for an Introductory Psychology text. 40 participants completed tasks during a simulated study session for an open-book quiz using one of the applications. The ability to use the e-Textbook to make notes, bookmarks, highlights, and to navigate throughout a chapter were examined along with user satisfaction, perceived workload, engagement, and comprehension. Results showed that use of both applications resulted in similar levels of comprehension of the material as well as satisfaction, perceived workload, and engagement. Participants were less successful and reported the Kindle to be more difficult to find material using the Table of Contents and to find previously highlighted text than Inkling. Turning pages, however, was reported to be more difficult with Inkling than Kindle. Participants were overall positive about the use of the e-Textbook as a study tool stating that information was easier and faster to find than when using a paper textbook. They also preferred its light weight and portability to a traditional book. Details on these findings and user interface design recommendations for e-Textbook reader applications will be discussed.

DISTRACTED WHILE DRIVING: A COMPARISON OF THE EFFECTS OF TEXTING AND TALKING ON A CELL PHONE

David Libby, and Alex Chaparro
Department of Psychology, Wichita State University

In the United States, 39 states have passed legislation banning texting while driving. By comparison, no state bans hands-free cellular phone use by adults while driving. The concern regarding texting reflects an underlying assumption that it poses a greater risk than talking on a cellular phone. However, there have been few published studies directly comparing these two tasks and their effects on driving performance. We conducted two experiments comparing the effects of talking on a cell phone and texting on driving performance. Experiment 1 was to compare the effects of texting and talking on a cellular phone on simulated driving performance. The results show that texting has a pervasive negative effect on mean speed, reaction time and eye movements relative to talking on a phone. The difference in performance might be due to the fact that texting often takes longer to perform than replying verbally. Experiment 2 investigated the effects of texting and talking on a cellular phone on simulated driving performance while equating task duration. After equating the time spent on each task, texting still had a greater impact on driving performance. Drivers in the texting condition had significantly slower reaction times, had more eye movements, drove more slowly and failed to detect as many peripheral letter targets compared to during the calling condition. The visuo-motor demands associated with text entry including the need to look away from the roadway to enter and confirm the text reply may account for the deleterious effects of texting on driving performance.

SPLITTING WATER MOLECULES VIA CONDUCTIVE NAMOMATERIALS FOR HYDROGEN PRDUCTION

Vishal Nageshkar, Emil Jurak, Madhulika Srikanth, and Ramazan Asmatulu
Department of Mechanical Engineering, Wichita State University

One of the main topics of discussion at every multi-national forum is about the fossil fuel depletion and carbon footprints. It is believed that the world will run out of cheap oil in 30 years, causing energy costs to rise, and probably hitting the economies of many nations. Time is now to look for alternative sources of energy, so that a gentle transition from fossil fuels to renewable sources can take place. While several research programs are being conducted mostly on the sun and wind energies, there is one more source that covers 71% of the Earth surface, which is water and unique to the Earth. Splitting water using electrolysis forms oxygen and hydrogen molecules. Hydrogen has several uses in energy generations, including fuel cells, hydrogen-powered engines, heating, and many others. In this experiment, conductive nanoparticles, such as graphene, carbon nanotubes, C_{60}, and indium tin oxide, were added into pure water with 10% of sulfuric acid solution, dispersed very well, and then electric current is passed through the dispersion at different DC voltages. During the tests, hydrogen gas was formed at the cathode, the negative side of the cell. The industrial hydrogen production using acid and pressure is very costly, and cannot compete with the fossil fuels. However, adding the nanoparticles increased the yield of hydrogen at lower voltages up to 10 fold. If the overall process is successful at a larger scale, the hydrogen production will be considerably low for the future energy demand of the world.

COMBAT IDENTIFICATION TRAINING USING AN AUGMENTED REALITY LEARNING SYSTEM

Dustin Smith, Melissa Chinn, and Joseph Keebler
Department of Psychology, Wichita State University

Combat identification (CID) is a high priority task throughout modern warfare. However, due to the quantity of fratricide accidents, it is reasonable to question the reliability of current CID training methods. With perceptual limitations (i.e. the keyhole effect), and the increase in use of unmanned vehicles (UVs) for missions, a question arises: How do we best train operators to perform well when presented with a combat identification task? More specifically: (a) Is training using canonical (front and side) views sufficient? (b) Due to UAV perspective surveillance, are non-canonical/birds eye views necessary for optimal combat identification performance? (c) Would training with either perspective yield sufficient performance? (d) Would training soldiers on both perspectives return superior combat identification performance? This research will examine training with an augmented reality learning system (BuildAR Software) to identify combat vehicles (i.e., Main Battle Tanks, and Personal Carriers). Therefore, subjects will be trained to identify tanks and personal carriers using either canonical or birds eye non-canonical perspectives. Further, training effectiveness will be measured using a computer-based assessment at the end of the study.

STATISTICAL ANALYSIS TO ESTABLISH THE RELATIONSHIP BETWEEN RADIATION CONSUMPTION AND ENERGY USE FOR MEDICAL X-RAYS

Fernando Valenzuela, *and Janet Twomey*
Department of Industrial and Manufacturing Engineering, Wichita State University

Current methods for estimating the amount of radiation used to produce an X-ray image are poor. Knowing this amount is an essential step in the development of a complete life-cycle analysis (LCA) of medical imaging procedures. The work presented is the outcome of research that employs statistical and probabilistic methods to process an image from an actual X-ray to determine a more accurate estimate of radiation used to create that image. The X-ray source, the interaction of the X-ray photons from source to target, and the interaction between photons and soft and hard tissue were simulated to obtain a result. The level of radiation absorbed by the patient is described using a correlation function between a non-filtered X-ray image and a filtered X-ray image.

NOTES:

Index of Presenters

For more information, please contact:

Kansas State University
Carol Shanklin, Kansas State University, 103 Fairchild Hall, Manhattan, KS, (785) 532-6191. www.ksu.edu/grad

Wichita State University
Abu Masud. Wichita State University, 107 Jardine Hall, 1845 Fairmount, Wichita, KS 67260-0004, (316) 978-3095. www.wichita.edu/gradschool

University of Kansas
Thomas Heilke, The University of Kansas, 213 Strong Hall, 1450 Jayhawk Blvd., Lawrence, KS 66045-7535, (785) 864-8440. www.graduate.ku.edu

University of Kansas Medical Center
Allen Rawitch, The University of Kansas Medical Center, 5015 Wescoe Building mail stop 1040, 3901 Rainbow Blvd, Kansas City, KS 66160
http://www.kumc.edu/academic-affairs/graduate-studies

Or visit: http://webs.wichita.edu/cgrs/