College of Human Environmental Sciences – FY2010 Research Abstracts

Addressing Food and Nutritional Security in East Africa by Building a Consortium of African-United States Educators (CAUSE)
The objective was to create a long range strategic plan for the Consortium of African and United States Educators (CAUSE) resulting in a self-sustaining, long-term, regional partnership among three Ethiopian universities, two Kenyan universities, and OSU and Langston University. Our initial problem model focuses on Food and Nutritional Security but this focus also provides a means of goal setting, objective identification, mutual cooperation, funding mechanisms and specific outcomes that will strengthen the capacity of higher education while solving problems for historically underserved populations, including women, in East Africa.
Sponsors: Higher Education for Development, United States Agency for International Development
PI/PDs: Stephan Wilson
Department of Nutritional Sciences: Barbara Stoecker
Division of Agricultural Sciences and Natural Resources: Jeff Hattey
Langston University: Roger Merkel

DESIGN, HOUSING, AND MERCHANDISING

Adoption of Sustainable Lighting: CFL's and LED's
Consumer participants experienced three types of lighting: incandescent, compact fluorescent lights (CFLs), and light emitting diodes (LEDs) and evaluated costs, return on investment, light level, energy consumption, disposal methods, health concerns, color, and overall appearance. Researchers measured the light levels and recorded attributes of lights in actual residential settings. This field study utilized one hundred consumers, aged 20 to 83. Preliminary findings showed Baby-Boomers were more likely to be willing-to-pay more for compact fluorescent than for incandescent. The study also revealed that most consumers agreed with "Sustainability is important to me." Consumers of all ages were more likely to agree that LEDs were sustainable after they participated in this study.
Sponsor: United States Environmental Protection Agency
PI/PDs: Paulette Hebert, Celia Stall-Meadows
Department of Human Development and Family Science: Jan Johnston

Edmon Low Library Room Renovation and Illumination Study
This study focused on the use of a survey questionnaire to inform a sustainable lighting design for the modification of an existing library. A forty-item questionnaire sought to evaluate the effect of lighting design on end-user perceptions and opinions and to gather general opinions regarding sustainability. 183 respondents completed questionnaires. Results indicate that the respondents were dissatisfied with existing lighting; that they were aware of sustainability and sustainable lighting; and suggested that issues be addressed to reduce the library's environmental footprint. End-users influenced a design proposal which is anticipated to increase sustainability, meet new university guidelines, and reduce energy consumption.
Sponsor: Oklahoma State University Foundation
PI/PD: Paulette Hebert

FSTechnology Ballistic Shoot Pack
A set of ballistic fabric systems as per Naval Research Laboratories specifications were constructed for subsequent ballistic performance testing by aforementioned laboratories.
Sponsor: FSTechnology
PI/PD: Semra Peksoz

Institute for Protective Apparel Research and Technology (IPART)
In accordance with IPART's mission "*To rapidly design, prototype and evaluate innovative, wearable protective apparel systems and related technologies, to facilitate technology transfer of newly developed*

products to industry, and to provide research and technology transfer learning experiences to students", the team of scientists continued designing and testing advanced personal armor to save lives of soldiers and civilian workers. Through developing smart apparel systems and other protective clothing, the projects aimed to prevent injury, promote wellbeing and increase quality of life as well as improving IPART's capabilities in material development, modeling and human factors.
Sponsor: Office of Naval Research, Naval Research Laboratory
PI/PDs: Donna Branson, Semra Peksoz, Adrianna Petrova
College of Engineering, Architecture, and Technology: Hongbing Lu, Jan Hanan, James Smay

Lighting for Reading: Designing an LED Luminaire for Homes and Offices
This project was conducted in three phases, beginning with an investigation of current applications of LED technology, potential residential and commercial markets for a new reading lamp, and sustainable practices and materials appropriate to lamp construction. The second phase was design development and construction of full scale prototypes. The final phase was an evaluation of prototypes by students, faculty, staff and visitors to an exhibition of all the proposed designs at the National Sustainability Expo on the Washington Mall.
Sponsor: United States Environmental Protection Agency
PI/PDs: Ted Drab, Paulette Hebert, Celia Stall-Meadows

Multiple Chemical Sensitivity in Oklahoma Homes
Researchers wanted to ask public housing residents about their home environments and multiple chemical sensitivity (MCS). The intent of the study is to assess Oklahoma residents to see if there are elements of the interior built environment which contribute to MCS for residents of public housing or that prevent individuals with MCS from considering living in proposed public housing. The researchers hope to determine how many Oklahoma residents suffer from MCS and what type of housing is available to them.
Sponsors: Auburn University, United States Department of Agriculture
PI/PDs: Randall Russ, Melinda Lyon, William Beitz, Gina Peek

Performance Evaluation of Glove Designs for Firefighters
In this study, the performance of a commercial firefighter glove and two glove prototypes was tested and compared. Modifications included reshaping the glove thumb and fingers and incorporating a wireless sensor to measure heart rate and blood oxygen saturation level. Six volunteers performed a series of grip, dexterity, and hand mobility tests. Test results did not show significant differences between the performance of the original and modified gloves but the modified designs, as a survey revealed, were perceived as performing better than the original design. The results will help redesign further the firefighter gloves to improve hand dexterity.
Sponsors: The University of Texas Health Science Center at Houston, Centers for Disease Control and Prevention
PI/PDs: Adriana Petrova, Semra Peksoz

Rynoskin Barrier Evaluations
Exposure to ticks and flies can threaten health through the transmission of disease and cause severe allergic reactions due to their saliva. Historically, preventing exposure has been the most effective method of limiting disease transmission. Chemical barriers can be effective, but involve chemicals that some people may not tolerate. Protective fabrics and clothing systems may be important in preventing exposure to ticks and biting flies (known as biting midges, sand fleas, or no-see-ums). The purpose of the project was to evaluate the effectiveness of a textile and garment system (Rynoskin™) as protection against ticks and biting flies.
Sponsor: Har-Son, Inc.
PI/PDs: Cheryl Farr
Division of Agricultural Sciences and Natural Resources: Michael Reiskind

Second Facility Management Course
Facilities management centers on the triad of people, process, and place, but the element of *people* is incomplete without recognition and consideration of different generations in today's workforce and the differences between these groups. This pilot study surveyed 55 facility management professionals from

the mid-western United States. Almost one quarter of the respondents to the survey did not agree that knowledge of generational differences was important, while about half of the respondents only somewhat agreed that it was important. However, a survey of relevant literature suggests that successful management of workplace generational differences can improve efficiency and enterprise viability.
Sponsor: International Facility Management Association -Oklahoma City and Tulsa Chapters
PI/PD: Paulette Hebert

Smart Clothing for Firefighter Protection
A proof of concept study to develop a smart clothing system to wirelessly detect and transmit physiological and location tracking data to a centralized control location in order to monitor the health and safety of firefighters was concluded. To assess the suitability of electronics and signals, the prototype sensors were embedded in firefighter coats and tested using a thermal manikin in hot and humid conditions. An independent study was conducted to evaluate the distance and timeframe in which the sensors are reliable. Lastly, a human subject testing was conducted to determine a relationship between the core temperature and micro environmental conditions.
Sponsor: Oklahoma Center for the Advancement of Science and Technology
PI/PDs: Semra Peksoz, Donna Branson
College of Arts and Sciences: Andy Li

Summer 2010 Faculty and Student Team (FaST) Research Program at Argonne National Laboratory
The purpose of the program was to investigate, measure, and document physical attributes and requirements of existing, large laboratory equipment and solicit scientist end-user comments about facility management (FM) and design. A comprehensive inventory of Department of Energy's national laboratory did not exist prior to the current pilot field study. A modified survey instrument was developed and tested. Fifty-nine laboratories and 294 pieces of equipment were surveyed. Scientist end users' verbal comments were analyzed for themes via key word searches. Four FM trends, 9 FM core competencies, and 3 FM components were found.
Sponsors: National Science Foundation, United States Department of Energy
PI/PD: Paulette Hebert

HUMAN DEVELOPMENT AND FAMILY SCIENCE

Analysis and Consultation Management for the Oklahoma Marriage Initiative
Oklahoma State University is engaged with the Oklahoma Marriage Initiative to provide on-going statistical analysis of program data as well as consultation on program evaluation design and data collection methods.
Sponsor: Oklahoma Department of Human Services
PI/PD: Christine Johnson

Child, Family, and School Influences on Developmental Outcomes of Children with and without Disabilities
The goal of this longitudinal study is to explore the physical, cognitive, and social-emotional development of children with and without disabilities, who are attending the Rise School of Stillwater, as well examine the effects of Rise School attendance on family functioning. Research to date indicates that children attending the Rise School are showing gains in all areas of development. Additionally, findings suggest positive changes in family relationships and teacher-child relationships. Parents indicated that Rise School-based therapies and educational experiences for their children have made a positive impact on their children and families.
Sponsor: Oklahoma State Department of Education
PI/PDs: Amy Halliburton, Hyunjin Kim

Early Settlement North
The Early Settlement North (ESN) Conflict Resolution Program is part of a statewide mediation network guided by state legislation and funded by the Alternative Dispute Resolution System of the Oklahoma

Supreme Court. ESN is committed to consistently providing high quality, effective, inexpensive, and expeditious conflict resolution. During FY 2010, ESN experienced a significant increase in cases from approximately 350 per year to over 500 cases. Mediations seek to resolve disputes over money, property, consumer dissatisfaction and/or relationships.
Sponsor: The Administrative Offices of the Courts
PI/PD: Sue Williams

Empowering Older Oklahomans and Rural Communities
The purpose of this project was to evaluate individual, family, and community barriers to positive nutrition and health among rural older Oklahomans. The findings from this study were used to develop an Oklahoma Cooperative Extension Service curriculum called "Empowering Older Adults with Assistive Technology to Shop, Cook, and Eat" which was presented in October, 2009.
Sponsor: United States Department of Agriculture
PI/PDs: Whitney Brosi, Jan Johnston
Department of Nutritional Sciences: Janice Hermann
Seretean Wellness Center: Linda Jaco

Evaluation of Adoptive Couples Marriage Enrichment Retreats
The purpose of the project was to assess short-term and long-term benefits of marriage enrichment retreats sponsored annually by Oklahoma Department of Human Services and delivered to Oklahoma couples who have adopted a child. Findings from the study are being utilized by family support agencies to increase family stability and child well-being.
Sponsor: Oklahoma Department of Human Services, United States Department of Health and Human Services
PI/PD: Christine Johnson

Evaluation of Special Caregivers Retreats
The objectives of this project are to evaluate program outcomes/impacts and produce research briefs in relation to marriage education retreats that are sponsored annually by Oklahoma Department of Human Services. The retreats target married couples who are caregivers to special needs children, including parents of children with autism, grandparents raising grandchildren, foster parents, and children with developmental disabilities. Findings will be used to impact family policy and inform family service providers of the unique challenges faced by these couples.
Sponsors: Oklahoma Department of Human Services, United States Department of Health and Human Services
PI/PD: Christine Johnson

Family and Peer Contexts of Child Overweight in a Rural Setting: Follow-up and Forward 4th Grade
The overarching purpose of the study was to increase understanding of the development of obesity among a high-risk population. Longitudinal health and psychosocial data have been collected among a representative sample of children in rural Oklahoma. 1200 first grade children began the study. FY10 funding allowed a final wave of weight and body fat data to be assessed among a cohort of 351 fourth graders in 24 schools.
Sponsor: Oklahoma Agricultural Experiment Station
PI/PDs: Amanda Harrist, Glade Topham, Laura Hubbs-Tait
Department of Nutritional Sciences: Lenka Shriver
College of Arts and Sciences: Melanie Page

Father's Count Study
Fathers Count! is a three-state study of how African American and Latino adolescent males and their fathers or father figures perceptions of contextual factors (neighborhoods, schools, and parents) are associated with delinquent behavior, depression, and educational success. The first wave of data collection began in the 2008-2009 academic year and involved self-report surveys completed by adolescents and father figures and census data about neighborhoods. Wave two of data collection with

adolescents is on-going. Results will be used by professionals who seek to prevent delinquency and depression, while promoting educational success in Latino and African American male adolescents.
Sponsors: North Carolina State University, United States Department of Justice
PI/PD: Carolyn Henry

Fostering Aspirations and Success through Educational Resources
The project explored identity and goal development among recently-homeless families and youth in transitional housing (N=62). Nineteen families (18 parents; 27 adolescents) completed questionnaires, interviews, and activities surrounding intervention participation. Seventeen transitional parents with young children completed surveys. Results suggest issues related to identity and goal development, self-efficacy, and support are paramount. Post-intervention youth reported increased confidence and optimism; greater community awareness; improved relationships and life situations, and wished program was permanent. Findings will be used to provide guidance for working with and studying homeless families.
Sponsor: Oklahoma Agricultural Experiment Station
PI/PDs: Michael Merten, Ron Cox, Amanda Morris

From Their Perspective: Alaska Native Grandparents' Roles, Strengths, and Needs
The purpose of this exploratory study is to broaden our understanding of the contributions of Alaska Native grandparents rearing grandchildren (GRG), learn what grandparenting means to Alaska Natives, to learn what events have and are changing grandparenting, and learn what grandparents do to care for their grandchildren, families, and communities. We will conduct face-to-face interviews with self-identified Alaska Native (GRG), including an Alaska Native grandparent who is the primary person caring for one or more grandchild for a year or an extended period of time in the Tanana, Bristol Bay and lower Yukon regions.
Sponsor: National Science Foundation
PI/PDs: Tammy Henderson
University of Alaska-Fairbanks: Jim Allen
Alaska Community Services: Jennifer Bell

Hispanic Children, Youth, and Family Needs Assessment
This study identified unique needs and barriers to resources experienced by Latinos in Oklahoma that might be addressed by culturally appropriate programming and policy recommendations. Findings indicated youthful substance use, pregnancy, and school dropout as primary concerns among this population, and that these problems may be caused or exacerbated by difficulties with: work-family balance, negotiation of changing cultural values, formation of community, discrimination, and a general state of chronic fear among Latinos in the state. Adoption of HB 1804, Oklahoma Taxpayer and Citizen Protection Act 2007, has negatively affected access to healthcare and the emotional well-being of legal and illegal Latino children, youth, and families in Oklahoma.
Sponsors: Oklahoma Cooperative Extension Services, Oklahoma Agricultural Experiment Station
PI/PDs: Ronald Cox, Kami Schwerdtfeger, Jan Johnston

Moms and Tots Study
The Moms and Tots Study investigated specific details about how mothers handle problematic discipline episodes in toddlers. This second-year follow-up survey asked how children's behavior problems and effortful self-control have changed and how discipline strategies have changed since the original interview. We are particularly interested in identifying the effects of specific disciplinary processes thought to reflect authoritative, authoritarian, and permissive parenting styles, to help parents do a better job of implementing authoritative parenting, because of its long-term benefits to children.
Sponsors: Counsellor Foundation, Narramore Christian Foundation
PI/PD: Robert Larzelere

National Healthy Marriage Resource Center (NHMRC) Content Development Project
The National Healthy Marriage Resource Center (NHMRC) Resource Development Project is an ongoing research and summary service provided by a team of faculty and student assistants. The team reviews research articles, press releases based upon healthy marriage research and other related documents to

create the "Front Page Facts" section for the NHMRC. The Front Page Facts section serves as a composite of their work, retooled into short summaries for the public. They have also provided expertise in creating collections for various healthy marriage related topics.
Sponsors: Public Strategies, Inc., United States Department of Health and Human Services
PI/PD: Kelly Roberts

National Survey of Fertility Barriers Data Users' Workshop
The objectives of the workshop were to introduce new users to the structure, content, and methodology of the National Survey of Fertility Barriers (NSFB) and to offer hands-on opportunities to analyze the data. Approximately 30 participants attended the workshop, which was held at the annual Population Association of America meeting in April, 2010.
Sponsor: Population Association of America
PI/PDs: Katrina Shreffler
The Pennsylvania State University: David Johnson
University of Nebraska-Lincoln: Julia McQuillan
Alfred University: Arthur Greil

NEFE High School Financial Planning Program
The High School Financial Planning Program is a financial literacy curriculum. Materials are available to high school students and teachers free of charge. The National Endowment for Financial Education provides a support website for students, teachers, and parents to assist with financial literacy education. The program assists educators with travel and materials as they assist teachers with program delivery or train other educators to provide the program.
Sponsor: National Endowment for Financial Education
PI/PD: Sissy Osteen

Oklahoma AgrAbility Project
This Project has three priorities: education, networking and direct assistance to farmers, ranchers and their families impacted by disabilities and barriers to continued work in agriculture. Staff provides case management, helping clients receive assistive devices to insure safety and improve quality of life. The project also increases competencies of rural healthcare providers to provide rehabilitation to farmers and ranchers. To date, AgrAbility has served 190 clients and provided Continuing Education to over 280 healthcare professionals. AgrAbility is a partnership of OSU/Oklahoma Cooperative Extension Service, Oklahoma Assistive Technology Foundation/Oklahoma ABLE Tech and Langston University.
Sponsor: United States Department of Agriculture
PI/PDs: Jan Johnston
Seretean Wellness Center: Linda Jaco

Oklahoma Geriatrics Education Center
The project provides educational programming on geriatrics, aging, and gerontology for rural health care providers. Partnerships have been created with Alzheimer's Association Oklahoma and Arkansas Chapter and building other collaborative relationships to provide quality educational programming. The programming is based on research and best practices, using diverse technologies, active learning, and medical education principles to guide the program.
Sponsors: Oklahoma University Health Sciences Center, United States Department of Health and Human Services
PI/PD: Tammy Henderson

Pa<ee Pakoo<oo Early Learning Center Demonstration Project
The purpose of the project was to determine progress of children enrolled in the learning center. From fall to spring children's performance on the following tests improved significantly: letter-word identification, verbal memory for words and sentences, number skills, and counting and sorting. In addition, 45% or more of the children attained the national norm on the Peabody Picture Vocabulary Test, the McCarthy Scales of Children's Abilities, and the Social Skills subscale of the Social Skills Improvement System.
Sponsors: Pawnee Nation of Oklahoma, United States Department of Education, Office of Indian Education

PI/PD: Laura Hubbs-Tait

Parent-Child Connection
This Oklahoma Cooperative Extension Service program provides in-home and group education and support for families expecting or who have a baby until the child is six years old. Using evidence-based curricula and program practices, goals are to assess family's strengths and needs, enhance family functioning, and promote positive parent-child interaction and healthy childhood growth and development. Four programs serve seven diverse counties: Canadian, Comanche, Cotton, Delaware, Jefferson, Stephens, and Texas. In FY 2010, 233 families were provided 3,171 home visits, 589 child development screenings, in addition to 78 parent education, support group, and family activity sessions.
Sponsor: Oklahoma State Department of Health
PI/PD: Debbie Richardson

Parenting, Peer, and Behavioral Correlates of Emotion Regulation during Adolescence
The project examined correlates of adolescent emotion regulation (ER). Data have been collected from 103 high-risk families with adolescents (*Mean* age = 13.54 years; 55.3% male; 26.2% European American, 73.8% ethnic minorities; 51.4% single parents). Data collection is ongoing. However, preliminary results are consistent with initial expectations. Specifically, youth ER was related to antisocial behavior, substance use, school grades, and prosocial behavior. Moreover, maternal harsh and punitive discipline strategies were significantly associated with poor anger and sadness regulation. Finally, peer ER and peer antisocial behavior were related to youth ER. Findings will be used to provide valuable information to social workers, parent educators, and other service providers who work to improve the lives of high-risk families.
Sponsor: Oklahoma Agricultural Experiment Station
PI/PDs: Michael Criss, Amanda Morris, Ron Cox

Researching Recruitment Challenges in Low-Income Marriage Education Programs
This project used a three-pronged approach to study recruitment challenges experienced by marriage education programs across the nation. Data collected from a national survey was verified by observing couple interactions in a lab setting. Marriage education program providers were also asked to describe lessons learned.
Sponsor: United States Department of Health and Human Services
PI/PDs: Brandt Gardner, Kelly Roberts

Rise School
The Rise program focuses on the needs of toddlers and preschoolers living with developmental disabilities/delays. The Rise program implements an early childhood education approach in classrooms which integrate children living with developmental disabilities with typically developing peers. Children in the Rise program receive needed therapies to meet the goals set forth in their IEP's or IFSP's. These therapies include Speech, Occupation, Physical and Music.
Sponsor: Oklahoma State Department of Education
PI/PD: Linda Sheeran

SPSS Hierarchical Linear Modeling Analyses
This project provided statistical consultation for an evaluation of an educational enhancement program called Great Expectations, implemented through the University of Oklahoma. The data were based on multiple tests in 1st, 3rd, and 5th graders in treatment and comparison group classrooms.
Sponsor: University of Oklahoma
PI/PD: Robert Larzelere

Turning the Tide on Poverty
This project is a community leadership program aimed at reducing poverty in small rural communities faced with economic decline. The project focused on small, rural communities in the Northwest to help find community-based solutions to poverty. Through the use of study circles and an action forum, the participating communities learned to work together toward meaningful change. This project, one of five

pilot states, will be used to examine the outcomes and similarities and differences in how the states responded to this approach as well as the ideas generated to fight poverty.
Sponsor: Southern Rural Development Center
PI/PDs: Renee Daugherty, Kimberly Williams

Unlocking the Secret to Optimal Health Status: The Oklahoma Centenarian Project
This study examined how psychological, social, and economic provisions influence health status in extreme later life. Data were collected from N = 154 persons aged, 99 and older residing throughout Oklahoma. Initial results indicate that lifetime exposure to trauma, perceived economic status, and personality traits including neuroticism, extraversion, and consciousness are associated with health status outcomes among persons living very long lives. Findings from this study will be used to develop a fact sheet for the Oklahoma Cooperative Extension Service.
Sponsor: Oklahoma Agricultural Experiment Station
PI/PDs: Alex J. Bishop, Jan Johnston

SCHOOL OF HOTEL AND RESTAURANT ADMINISTRATION

Center for Hospitality and Tourism Research
This project studied the impact of revenue generated through visitor spending on state parks and how it impacts the local community and the State. The project determined: 1) the economic multipliers for the State Parks, 2) the economic impact of total visitor spending on the local community, 3) the direct and indirect effects of total visitor spending on sales, income and jobs, and 4) the total effects using a regional economic multiplier on the estimate of total visitor spending.
Sponsor: Oklahoma Department of Tourism and Recreation
PI/PDs: Hailin Qu, Sheila Scott-Halsell

The H.O.T.E.L Atlantis Program-Higher Opportunities for Training, Education, and Language
The objective of the program is to strengthen the quality of entry-level managers available to the transatlantic hospitality industry by developing a specialized flexible pathway dual-degree undergraduate program that creatively incorporates the best academic and experiential learning resources available at three premier universities on both sides of the Atlantic.
Sponsor: United States Department of Education
PI/PD: Radesh Palakurthi

North American Mobility in Higher Education: Building Bridges through Culture, Cuisine, Agriculture and Tourism
The object of this project is to develop a cross-border curriculum model that will enhance the learning and experiences of post-secondary students. The movement of students within the North American corridor will occur in three forms, all lasting a semester or longer: language study and course work; language study with a combination of course work and practical work experience; and language study plus practical work experience. Faculty from all campuses will work together to develop innovative, integrated curriculum for the project.
Sponsor: State University of New York College of Agriculture and Technology, United States Department of Education
PI/PDs: David Njite
Division of Agricultural Sciences and Natural Resources: Craig Edwards

Off Campus PhD Program
There is a need for advanced academic degree preparation in the area of higher education for Hospitality and Tourism Management in Jamaica and Puerto Rico. The lack of advanced educational degrees available for teaching and research in hospitality and tourism management in higher education in these areas provide an opportunity to partner with Oklahoma State University to offer the education and advanced preparation in hospitality management.
Sponsor: Universidad del Este, Puerto Rico, University of Technology, Jamaica

PI/PD: Hailin Qu

NUTRITIONAL SCIENCES

Acute and Chronic Effects of Freeze-dried Strawberry Beverage on Cardiovascular Risk Factors in Subjects with Abdominal Adiposity and Dyslipidemia
Nutritional epidemiology provides mounting evidence on the inverse association between increasing consumption of whole fruits, such as, strawberries, and incidence of cardiovascular disease. Thus, to further investigate on the preliminary findings, the project examined the effects of low and high doses of freeze-dried strawberries on serum glucose and lipid profiles, biomarkers of oxidative stress and inflammation, and serum antioxidants in a 12-week randomized controlled trial. Blood draws, anthropometrics, blood pressure, and dietary data was collected to determine chronic effects of strawberry intervention.
Sponsor: California Strawberry Commission
PI/PDs: Arpita Basu
University of Oklahoma Health Sciences Center: Timothy Lyons

Anti-Inflammatory Properties of Compounds in Dried Plums
Chronic inflammation is a major contributing factor in the simultaneous development of osteoporosis and atherosclerosis associated with aging. This project focused on the ability of polyphenolic compounds in dried plums to prevent these conditions. Results of this research revealed that dried plum's polyphenols reduce bone resorption and stimulate bone formation, and that these effects are mediated by key cellular regulators. In terms of the cardiovascular system, supplementation with dried plum polyphenols prevented early events associated with the development of atherosclerosis, and prevented vascular pathology. The overall response to the polyphenols was more pronounced in the cardiovascular than the skeletal system.
Sponsor: Oklahoma Center for the Advancement of Science and Technology
PI/PD: Brenda Smith

Beneficial Effects of Dried Plum and Age-related Osteoporosis
Previous studies have demonstrated that dietary supplementation with dried plums reverses bone loss associated with estrogen deficiency, but no information is available with regard to age-related bone loss. This project is designed to determine whether consumption of dried plums can prevent age-related bone loss and restore bone lost to aging in an animal model. Results from this study suggest that supplementing the diet of aged animals with dried plum can reverse bone loss due to aging over time and clinical studies to test the efficacy in humans are planned.
Sponsor: Northern California Institute for Research and Education, Inc.
PI/PD: Brenda Smith

Bone Physiology and Mechanics in Osteomyoplasty Amputation Rehabilitation
Patients who undergo lower limb amputation due to trauma or dysvascular disease are at great risk for osteoporotic fracture. This research project focused on the evaluation of the short- and longer-term effects of two surgical amputation techniques on bone health and rehabilitation capacity. Participants were randomly assigned to one of two surgical procedures and then underwent a comprehensive rehabilitation program which included a six-month exercise program, nutritional assessment and follow-up analyses of bone structural and metabolic changes and functional capacity. This study will provide important information for surgical and rehabilitative approaches that will optimize amputees' long-term bone health.
Sponsor: Veteran Affairs Medical Center
PI/PD: Brenda Smith

Chickasaw Nation Social Marketing and Evaluation
Social marketing is an effective strategy to address culturally specific behavior change among diverse audiences. This research is a multi-year project which addresses the nutrition and health concerns of Native American families who receive either commodity or supplemental nutrition assistance program

benefits. Social marketing messages are being developed based on emic views of product, promotion, price, and place. The research is iterative in that messages are developed, evaluated, and reformulated with indigenous input. The long-term goal is to positively influence the state of obesity among Native Americans living in Chickasaw Nation boundaries by attending to cultural and economic realities.
Sponsors: Chickasaw Nation, Oklahoma Department of Human Services
PI/PD: Stephany Parker

Chickasaw Nation: Tapping into the Power of Influence
The goal of the project evaluated the impact influential interaction principles used by Chickasaw Nation WIC educators had on: 1) the level of satisfaction WIC participants have related to their WIC experience, and 2) on parental/caregiver feeding practices related to breastfeeding duration and initiation, weaning toddlers from using bottles, and introduction of solid foods.
Sponsor: Chickasaw Nation
PI/PD: Deana Hildebrand

Chromium and Antioxidant Intakes of Older Oklahomans with and without Metabolic Syndrome and Effects of Aspirin or Antacid on Chromium Absorption
Dietary chromium, antioxidants and macronutrient intakes of Oklahoma women over fifty years of age with and without metabolic syndrome are being analyzed by duplicate plate and food record analyses. Additionally, effects of two over-the-counter medications (aspirin or antacid) on chromium absorption are being measured by assessing chromium in serum and urine. Subject recruitment is continuing.
Sponsor: Oklahoma Agricultural Experiment Station
PI/PDs: Barbara Stoecker, Janice Hermann

Common Mechanisms Controlling the Response to Iron and Oxygen Availability
The long term goal of this proposal is to advance understanding of how iron metabolism is coordinated, and how alterations in iron sensing can lead to the development of disease. Our primary objectives are to determine the extent to which iron status affects the coordination of oxygen signaling by modulating the expression of hypoxia factor 2-alpha (HIF2a) and to characterize the HIF2a transcriptional network that is sensitive to iron regulation. Importantly, we will also critically examine the role of iron regulatory proteins (IRP) in modulating HIF2a protein translation and compare this regulation to established targets of IRPs.
Sponsor: United States Department of Agriculture
PI/PD: Stephen Clarke

Cranberry Flavonoid Consumption and Biomarkers of Lipid Peroxidation and Inflammation in Subjects with Metabolic Syndrome
Metabolic syndrome (MeS), a constellation of several risk factors including dyslipidemia, hypertension, central adiposity, and impaired fasting glucose, is also a condition associated with increased aging, inflammation and oxidative stress. Cranberry flavonoids are potent antioxidants and also anti-inflammatory agents. The main objective of this randomized controlled trial was to analyze any difference in glycated hemoglobin (HbAlc), glucose and lipid levels, and biomarkers of oxidative stress and inflammation, in subjects following a 4-week intervention of cranberry flavonoids in comparison to placebo.
Sponsor: Cranberry Institute
PI/PD: Arpita Basu

Does Selenium Affect Inflammation and Bone Quality?
Effects of dietary selenium and chronic inflammation are being investigated in second-generation selenium-deficient mice. Mice were fed 0.02 (deficient), 0.2 (adequate), 2 and 4 mg selenium/kg diet and implanted with a placebo pellet or LPS pellet. Neither dietary selenium nor inflammation produced by the LPS affected body weight gain; however, bone mineral density of the spine was significantly reduced by chronic inflammation. Analyses of bone microarchitecture, cortical thickness, and bone strength are continuing using microcomputed tomography.
Sponsor: Oklahoma Center for the Advancement of Science and Technology
PI/PDs: Barbara Stoecker, Brenda Smith

Effects of Mango on Bone Parameters in High Fat Diet-induced Obesity
Osteoporosis is a major public health threat and some dietary practices such as low calcium intake and high fat diet contribute to the development of this condition. This study investigated the effect of freeze dried mango on bone parameters in mice which were fed a high fat diet. Our hypothesis is that compounds in mango can counter the negative effects on bone due to high fat diet. Mangoes contain high amounts of vitamin C, carotene, and phenolic compounds that may have a role in maintaining skeletal health. Our findings indicate that mango improved bone parameters and reduced body fat due to a high-fat diet. Human studies are warranted to confirm our findings.
Sponsor: National Mango Board
PI/PDs: Edralin Lucas, Brenda Smith, Stephen Clarke, Solo Kubividila

Effect of Mushrooms on Endotehlin-1 Secretion and Cancer
Cancer is the second leading cause of death in the United States, with cardiovascular disease taking first. Although the causes are multifactorial, diet low in anti-oxidants and rich in fat, which increases the risk of inflammation, is thought to play a crucial role. Mushrooms are a source of some micronutrients known to prevent inflammation and boost immunity. This study examined the effect of white button mushrooms, the most popular in the American diet, on endothelin-1 and other inflammatory proteins that usually increase tumor cell growth and spread to other organs. The preliminary data suggest that white button mushroom extracts block the synthesis of these proteins in cells grown in a test tube. The next phase of the study is to examine these proteins in mice with and without cancer. If data are confirmed, they will lead to human studies. Our study may increase mushroom consumption, help Oklahoma farmers and the food industry.
Sponsor: Oklahoma Center for Advancement of Science and Technology
PI/PDs: Solo Kuvibidila, Edralin Lucas, Brenda Smith, Stephen Clarke
University of Oklahoma: Stan Lightfoot

Expanded Food and Nutrition Education Program
The purpose of this program is to empower families with the knowledge and skills needed to make healthy lifestyle choices by providing nutrition education, to promote appropriate nutrition education messages, and to refer families to agency nutrition programs. Pre/post evaluation records indicate 95% of the families/households graduating from the program exhibit a positive change in their diet at the time of exit from the program.
Sponsors: United States Department of Agriculture, Oklahoma Cooperative Extension Service
PI/PD: Debra Greene-Garrard

Growing Strong Bodies and Minds: A Literacy/Nutrition Education Program
The aim of the project is to utilize children's literature to promote the development of healthful food preferences, physically active lifestyles, and literacy skills in young children. It supports the addition of whole grains, fruits and vegetables, and low-fat dairy to United States Department of Agriculture WIC and National School Lunch programs, and is designed to build pre-reading and reading skills in young children. The curriculum was distributed statewide to 145 Oklahoma Cooperative Extension, Oklahoma State Department of Health and Indian Tribal Nation nutrition and health educators during the fall of 2009. An evaluation is currently being conducted.
Sponsor: Oklahoma State Department of Health
PI/PD: Deana Hildebrand

Grown-ups Need Dairy Products Too!
Development of food and nutrition lessons focusing on Breakfast, Buying Dairy, Cheese, Dairy Snacks and Beverages, Milk and Food Safety and Dairy were designed and are currently being distributed to encourage increased consumption of milk and other healthful dairy products to economically disadvantaged families in Oklahoma participating in USDA nutrition education programs. Based on the dairy lessons developed by Oklahoma, display materials have been developed by Texas and will be translated into Spanish by New Mexico in 2010-11. All developed materials meet low literacy needs and will be used by all three states to reach low-income audiences.
Sponsor: Southwest Dairy Museum
PI/PD: Debra Greene-Garrard

How Does Dried Plum Reverse Bone Loss
Osteoporosis is a debilitating problem for postmenopausal women and one strategy for improving skeletal health is to utilize foods rich in bioactive compounds (e.g. dried plums) that can prevent and reverse bone loss. Previously, we have shown that dried plum has potent effects on bone; however, our understanding as to how these effects are mediated has been limited. Results from these studies are providing evidence that supplementation with dried plums suppresses bone metabolism and current efforts are underway to identify the bioactive components in dried plums.
Sponsor: United States Department of Agriculture
PI/PD: Brenda Smith

Mango Modulates Glucose and Lipid Parameters in High Fat Diet-Induced Obesity
The objective of this project was to investigate the effect of freeze dried mango on glucose and lipid parameters in an animal model of high fat diet-induced obesity. Mangos contain high amounts of beta carotene, vitamin C, fiber, and phenolic compounds that may contribute to its health benefits. Our findings demonstrated that a diet containing mango, improved blood glucose to a similar degree as the glucose lowering drug, rosiglitazone, in an animal model of diet-induced obesity.
Sponsor: National Mango Board
PI/PDs: Edralin Lucas, Brenda Smith

Maternal Dietary Nutrients and Neurotoxins in Infant Cognitive Development
Nutritional research into infant cognitive development has focused on single nutrients and examined individual components of cognition, such as memory. In this project, we take the approach of examining multiple cognitive processes and nutrition factors when infants are three, six, and nine months old to develop a model of the effects of nutrition on infant development. We will test the hypothesis that significant variation in infant cognitive development assessed at these three ages will be accounted for by variation in the zinc, iron, lead and cadmium content of maternal milk and blood sampled from mothers of breastfed infants when they are three months old.
Sponsor: United States Department of Agriculture
PI/PDs: Tay Kennedy
Department of Human Development and Family Science: Laura Hubbs-Tait
College of Arts and Sciences: David Thomas

Microarchitectural, Structural, and Cellular Alterations in Bone: Role of Iron in Maintaining Optimal Bone Health
Diseases of iron metabolism continue to be a major health concern with iron deficiency remaining the most common single nutrient deficiency in the U.S. Little is known as to how iron deficiency during adolescence affects the risk for developing osteoporosis. Nutritional status is a key determinants in the acquisition of bone mass, and plays a critical role in an individual's lifetime risk for osteoporosis. Iron deficiency worsens calcium deficiency by further impairing skeletal health. Using an animal model of iron deficiency, the project examined how a lack of dietary iron negatively affects bone health by examining structural properties of bone in addition to examining the expression of genes associated with bone metabolism. The results will provide information that will enhance our understanding of the long-term implications of iron deficiency.
Sponsor: Oklahoma Agricultural Experiment Station
PI/PDs: Stephen Clarke, Brenda Smith, Edralin Lucas

Molecular Coordination of Iron Homeostasis by MicroRNAs
Diseases of iron metabolism continue to be a major health concern in the United States. Surprisingly little is known about the molecular mechanisms regulating iron metabolism in skeletal muscle and how alterations in this tissue affect iron homeostasis. Evidence suggests gene expression is regulated by iron deficiency; however, the molecular mechanisms remain poorly characterized. Thus our primary objectives are to determine the extent to which expression of miRNAs is regulated in response to iron deficiency and to characterize the impact of miRNA expression on potential regulatory targets involved in iron metabolism.
Sponsor: National Institutes of Health
PI/PD: Stephen Clarke

Momordica Charantia Modulates Glucose and Lipid Parameters in High Fat Diet-induced Obesity
High fat diet plays a significant role in the development of dyslipidemia, obesity, and diabetes. Dietary approaches that can reduce these conditions without side-effects are highly desirable. The purpose of this project is to investigate if dietary supplementation of *Momordica charantia* (MC) will lower blood glucose and lipid parameters in an animal model of high fat diet-induced obesity. Our findings demonstrated that MC supplementation counteracted the negative effects of high fat diet. MC lowered blood glucose and lipid and reduced body fat due to consumption of high fat diet. The mechanisms by which MC exerts these positive effects are currently being investigated.
Sponsor: United States Department of Agriculture
PI/PDs: Edralin Lucas, Brenda Smith

Oklahoma Nutrition Education-Supplemental Nutrition Education Plan
The purpose of this program is to empower families with the knowledge and skills needed to make healthy lifestyle choices by providing nutrition education, to promote appropriate nutrition education messages, and to refer families to agency nutrition programs. Pre/post evaluation records indicate 96% of the families/households graduating from the program exhibit a positive change in their diet at the time of exit from the program.
Sponsors: Oklahoma Department of Human Services, United States Department of Agriculture
PI/PDs: Debra Greene-Garrard, Barbara Brown, Janice Hermann, Deana Hildebrand

OrganWise Guys Comprehensive School Program
The OrganWise Guys is a nutrition education program designed to teach healthy eating habits to children and to engage in physical activity. The OrganWise Guys is a multi-media, dynamic, interactive, cross-curricular program that uses fun characters based on the organs of the body (such as Hardy Heart; Peri Stolic, the large intestine; and Sir Rebrum, the brain), coupled with high energy activities, to teach children how to make positive health, nutrition, and physical activity choices.
Sponsor: Health Care Service Corporation
PI/PD: Debra Greene-Garrard

Osteoporosis Risk in Oklahoma Native American Women: The Role of Inflammation and Diabetes
Current estimates related to the prevalence of osteoporosis are based primarily on Caucasian populations. Native American women may be considered a high risk group for osteoporosis due to lifestyle factors such as physical activity, calcium and vitamin D intake, as well as the incidence of Type II diabetes. This study assessed osteoporosis risk in Oklahoma Native American women and the role of Type II diabetes and inflammation. Additional data collection is underway and we anticipate the results of this study will provide new insights into Native American women's risk for osteoporosis.
Sponsor: Oklahoma Agricultural Experiment Station
PI/PDs: Brenda Smith, Janice Hermann, Stephen Clarke

The Protective Role of Soy Isoflavones against Complications with Obesity and Chronic Inflammation
Metabolic complications of obesity, such as insulin resistance, that lead to the development of chronic diseases have been associated with a chronic inflammatory response. Plant-based chemicals such as soy isoflavones have been reported to have anti-inflammatory properties, and to reduce body weight and adipose deposition. This study was designed to study the effects of soy isoflavones on the outcomes of obesity-induced inflammation. The findings from this study are providing new insights into the health effects of soy isoflavones that can be used in the future to establish dietary reference intakes and tolerable upper limits for such bioactive food components.
Sponsors: South Dakota State University, United States Department of Agriculture
PI/PD: Brenda Smith

Strong and Healthy Oklahoma Initiative
The Community Service Council and OSU Extension combined efforts to offer nutrition education programs to WIC eligible low-income mothers in Tulsa. The goal of the program was to increase nutrition knowledge, increase consumption of fruits, vegetables and whole grains. Participants were involved in classroom instruction, cooking demonstrations and meal sharing with their young children. Pre and post measurements were taken for weight, blood pressure, cholesterol and glucose levels. Food recalls and

behavior checklists were taken at the beginning and end of the program as well as a follow-up after 3 months. Evaluation of the program is near completion.
Sponsor: Community Service Council of Greater Tulsa, Inc.
PI/PD: Debra Greene-Garrard

Utilizing an Ecological Perspective as a Framework for Understanding Native American Elder's Views of Diabetes for the Development of an Indigenous Action Plan
Formative research indicates that elders are important family change agents when it comes to diet-related health behaviors. Our research utilized an ecological perspective to identify personal, interpersonal, and environmental factors which impact intergenerational health decisions. Participatory methods are being used to identify how elders can influence change at multiple levels. Research results are expected to inform the development of diabetes prevention programs among Native American families. The long term goal of this research is to decrease the incidence of chronic diseases such as diabetes and obesity by attending to culture preferences when designing successful educational programs for Native American families.
Sponsor: Chickasaw Nation Health System
PI/PDs: Stephany Parker, Janice Hermann

Zinc and Maternal-Infant Brain Function in Southern Ethiopia: Randomized Controlled Trials
Zinc status of many children in Southern Ethiopia is low, and low zinc status has been associated with less focused attention and decreased motor function in children. We are measuring growth and testing cognition of infants and young children, as well as assessing dietary zinc intakes and nutritional status of their mothers. Total zinc absorption by women in late pregnancy is ~ 50% of the estimated physiologic requirement. Results from these trials in a zinc deficient population will provide guidance for establishing dietary recommendations for infants and for pregnancy in the United States.
Sponsors: University of Colorado Health Sciences Center, National Institutes of Health
PI/PDs: Barbara Stoecker, Tay Kennedy
Department of Human Development and Family Science: Laura Hubbs-Tait
College of Arts and Sciences: David Thomas