

## College of Human Sciences – FY2012 Research Abstracts

### **Military Academic Advancement Program**

Oklahoma State University, a member institution in the Great Plains Interactive Distance Education Alliance and partner in the Military Academic Advancement Program (MAAP), is participating in the development, implementation and expansion of online academic programs. New online programs in Early Childhood Education and Family and Community Services and expansion of an existing Family Financial Planning program will provide educational opportunities to military personnel, dependents and civilians who provide support to military families. OSU faculty participated in professional development at the U.S. Army installation in Ft. Leavenworth, KS. In follow-up meetings, faculty have developed curriculum for each new program.

**Sponsors:** Kansas State University, United States Department of Agriculture

**PI/PD:** Shiretta Ownbey

## **DESIGN, HOUSING, AND MERCHANDISING**

### **Energy Consumption Management through Clothing Choices**

The purpose of this project is to teach university students and adult audiences about energy management through personal clothing selection. The ultimate goal of the project is to address home energy management through the creation of garment prototypes that can be reproduced by the Oklahoma Home and Community Education membership. Evaluation will determine the role of the garment in reducing home energy costs.

**Sponsor:** Donna Cadwalader Research and Development Grant

**PI/PDs:** Gina Peek, Adriana Petrova

### **Enhancing Facility Management and Design Research and Education**

The purpose of this project was to develop a facility management and design research and education proposal. The proposal entitled "*Energy Efficient Facility Management and Design Forum*" was developed and submitted. Although the proposal was not funded, the International Facility Management Association emerging leaders were invited to DHM 3823 (Professional Practice for Interior Designers) for interactions with students. The ideas, energy and enthusiasm for the facility management profession were shared at the social and networking opportunity.

**Sponsor:** International Facility Management Association, Tulsa Chapter

**PI/PDs:** Mihyun Kang, Paulette Hebert

### **An Evaluation of the Existing Interior Conditions of the Epworth Villa Facility**

The project is a quantitative and qualitative study of the Epworth Villa facility consisting of existing lighting levels and a comparison of lighting industry recommendations to existing lighting levels.

**Sponsor:** Epworth Villa

**PI/PD:** Paulette Hebert

### **Lead-Free Oklahoma**

The purpose of the project is to use the XRF, a unique assessment tool, that is, a portable X-ray fluorescence analyzer, to teach educators, and subsequent consumers, to evaluate hidden heavy metals dangers and address deficiencies through best practices. Program evaluation will take place using Oklahoma Cooperative Extension Service Safety Issue Team criteria.

**Sponsor:** Ambassadors, CE-FCS Ambassadors Dorothy Blackwell Legacy Award

**PI/PD:** Gina Peek

**Measuring the Impacts of Existing Artificial Optical Radiation at Three Sites: A Pilot Study of Military, Student, and Older Adult Housing Communities**

This project studied lighting preferences and behaviors and 1) documented and evaluated existing lighting across three housing community types and compared these to recommended levels, 2) educated consumers about sustainable vs. unsustainable lighting, and 3) determined barriers to consumer adoption of sustainable lighting through surveys of college students, military families, and older-adults. Field studies revealed evidence of optical radiation across all housing types. Some light levels exceeded industry recommendations. Surveys found sustainability is most important to university students and military personnel.

**Sponsor:** United States Environmental Protection Agency

**PI/PDs:** Paulette Hebert, Gina Peek

University of Oklahoma: Abimbola Asojo

**Oklahoma Healthy Homes Project**

The objective for the project is to continue to develop and improve our Healthy Homes education, curriculum, and toolkits. The outcomes of the project form the foundation for manuscripts and conference proposals. Specifically, materials are presented in the Journal of Extension, the Housing Education and Research Association, and the National Healthy Homes conferences.

**Sponsors:** Auburn University, United States Department of Agriculture

**PI/PD:** Gina Peek

**Perception Study of Lighting Effects and Lighting Design Assistance for New Facilities**

The focus of the study is the effects and perceptions of colored light on mood, circadian rhythms and sleep in older adults; perceptions of lighting on safety and security; and perceptions of light source color on color perceptions of older adults.

**Sponsor:** Epworth Villa

**PI/PDs:** Paulette Hebert, Mihyun Kang

**HUMAN DEVELOPMENT AND FAMILY SCIENCE**

**CareerAdvance Outcomes Study, Community Action Project of Tulsa County**

This project is designed to study the expansion of CareerAdvance, an adult workforce development program run by the Community Action Project of Tulsa County (CAP). CareerAdvance supports the career development of low-income parents with children enrolled in CAP's early learning centers. The focus of OSU's piece of this project is to assess the effects of the program on children's development (e.g., school readiness and socio-emotional development). We are collecting data on children after they leave CAP's early learning centers, in Kindergarten and first grade through home visits. This study will help us better understand the impact of workforce development programs on children and families.

**Sponsors:** Northwestern University, Institute for Policy Research, United States Department of Health and Human Services

**PI/PD:** Amanda Morris

### **Center for Family Resilience**

The Center for Family Resilience (CFR) focuses on scholarship emphasizing individual and family risk and resilience. The CFR works as an interface between community and government social service organizations and the resources of the university to create and disseminate scientific knowledge that builds to programmatic and policy strategies that promote individual and family resilience.

**Sponsor:** George Kaiser Family Foundation

**PI/PD:** Ron Cox

### **Disability Status and Impact on Agricultural Life for Oklahoma Farming and Ranching Families**

There is scant data available on current status and impact of disabilities on Oklahoma farm and ranch families. This study identified barriers including: lack of accurate and available information for individuals living with disabilities and isolation from rehabilitation technology and adequate services. Survey findings: 88% of respondents reported a condition that interfered with daily living with majority reporting strength and endurance hindrance. Prevalent disabling condition reported: musculoskeletal (e.g. osteoarthritis, rheumatoid arthritis) with back, hand, knee, shoulder and wrist pain. Translated research findings inform Oklahoma Cooperative Extension Service curricula to reduce the incident of injury; explain the normative and non-normative aging processes of this work force; and develop professional proficiency in rehabilitation professionals through affiliation with Langston University School of Physical Therapy.

**Sponsors:** University of Texas, Health Science Center at Tyler, National Institute for Occupational Safety and Health

**PI/PDs:** Jan Johnston

Langston University: Lynn Jeffries

### **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. Mediations seek to resolve disputes over money, property, consumer dissatisfaction and/or relationships.

**Sponsor:** The Administrative Offices of the Courts

**PI/PD:** Sue Williams

### **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.

**Sponsors:** 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

### **Fathers 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. Data collection involved self-report surveys completed by adolescents and father figures and census data about neighborhoods. 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

### **From Their Perspective: Alaska Native Grandparents' Roles, Strengths, and Needs**

The purpose of the study is to broaden our understanding of the meaning of grandparenting among the current indigenous group. We seek to learn about the experiences of grandparents living in rural and urban areas, their strengths, wants, and needs, and to discover what and who influenced their lives. We interviewed 57 study participants, presented findings to one rural community, and obtained approval of the findings by one tribal council. The research team is currently conducting data analysis on the remaining communities.

**Sponsor:** National Science Foundation

**PI/PDs:** Tammy Henderson

University of Alaska-Fairbanks: Jim Allen

Alaska Community Services: Jennifer Bell

### **Investigating Attitudes toward Age of First Marriage in Oklahoma**

Focus groups were conducted in three differing high school communities across the state (Northwest, Central, and Southeast). Students were asked questions about their attitudes about marriage, when they believe they should get engaged or married, and other factors related to the decision to marry. Results were coded and integrated into a preliminary report to the agency.

**Sponsor:** Public Strategies, Inc.

**PI/PD:** Kelly Roberts

### **Latino 4-H Mentoring in Oklahoma Program**

The purpose of this 18-month longitudinal study was to evaluate the effectiveness of a program that promotes 4-H activities, family life skills training, and youth mentoring to reduce negative behavioral outcomes among Latino youth. Preliminary programmatic impacts include increased parent-child relationships, child mental health, school attachment and study habits, and decreases in negative peer affiliations.

**Sponsors:** National 4-H Council, Office of Juvenile Justice and Delinquency Prevention

**PI/PDs:** Ron Cox

College of Agricultural Sciences and Natural Resources: Charles Cox

### **Linking Gerontology and Geriatrics: Addressing Ethics, Options, and Challenges in Rural Communities Conference**

The conference addressed three primary tracks: (a) Bioethics; (b) Health and Well-being; and (c) Disaster Preparedness. Some of the key speakers included Drs. Matthew McNabney, John Hopkins University; Mark Stratton, University of Oklahoma; and Nancy Van Winkle, OSU Center for Health Sciences. Workplace issues were addressed by Dr. Michael Larranaga of OSU's School of Fire Protection and Safety Technology, and Dr. Joyce Hood of Occupational Health Services at Cook Children's Healthcare Systems in Fort Worth, Texas. Other Oklahoma speakers were Ms. Gail Bieber, Alzheimer's Association Oklahoma/Arkansas Chapter and Ms. Glenda Ford-Lee, Oklahoma State Department of Health.

**Sponsors:** University of Oklahoma Health Sciences Center, National Institute of General Medical Sciences

**PI/PD:** Tammy Henderson

### **Moms and Tots Study**

This study is investigating details about how mothers handle discipline episodes in toddlers. Researchers are looking for specific disciplinary processes that differentiate authoritative parenting from authoritarian and permissive parenting, because of the documented long-term benefits of authoritative parenting for children. Our first publication shows how interpersonal traumatic experiences make mothers more at risk for expressing verbal hostility toward toddlers, which causes increases in toddler symptoms related to problematic childhood diagnoses, such as Oppositional Defiant Disorder.

**Sponsor:** Narramore Christian Foundation

**PI/PD:** Robert Larzelere

### **More Than a Read Aloud: Teaching Science through Literacy While Meeting the Needs of Diverse Learners**

Twenty-nine pre-kindergarten through third grade teachers from northwest Oklahoma participated in a training, which illustrated ways to integrate science and language arts while providing support to children with developmental delays/disabilities and those who are still learning English. Sources of data include lesson plans and reflections that the participants posted during the 2011-12 academic year on an online community of learners site, teaching efficacy regarding English language learners as well as science, and attitudes about inclusion. The goal of the research is to assess the program effectiveness in supporting teachers' development of strategies for integrating subjects while making accommodations for all learners.

**Sponsors:** Oklahoma State Regents for Higher Education, United States Department of Education

**PI/PDs:** Julia Atilas, Jennifer Jones

### **National Healthy Marriage Resource Center 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. Ongoing content development has been generated for the Administration for Children and Families Healthy Marriage Initiative work for the NHMRC project. Included in this work have been content for the "Front Page Facts" section, research briefs over marriage related topics, and fact sheets over marriage related topics.

**Sponsors:** Public Strategies, Inc., United States Department of Health and Human Services

**PI/PD:** Kelly Roberts

### **NEFE High School Financial Planning Program**

The program provides a financial literacy curriculum and support materials for high school students, teachers, and parents. Materials are available free of charge to all participants. The National

Endowment for Financial Education provides a support website for students, teachers, and parents to assist with financial literacy education. The program assists with travel, conference registration, exhibit costs, and materials to provide training and support with program planning or delivery involved in extending materials and education to extension educators, teachers, and students.

**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. The project lead is OSU/Oklahoma Cooperative Extension Service in partnership with Oklahoma Assistive Technology Foundation/Oklahoma ABLE Tech and Langston University's School of Physical Therapy.

**Sponsor:** United States Department of Agriculture

**PI/PDs:** Jan Johnston

Seretean Wellness Center: Linda Jaco

Langston University: Lynn Jeffries

### **Oklahoma Geriatrics Education Center**

OSU developed and dispensed an in-service training kit on disaster preparedness, and assessed professional practice gaps of health care and other professionals working with older adults in rural Oklahoma

**Sponsors:** Oklahoma University Health Sciences Center, United States Department of Health and Human Services

**PI/PD:** Tammy Henderson

### **Oklahoma YFP 4-H Military Youth Program**

This project uses the Youth Families with Promise program that combines 4-H activities, family life skills training, and youth mentoring to reduce and prevent negative outcomes and build positive skills and resiliency in military children and their families. As a result of the unique stressors placed on military families due to their service in the armed forces, military youth are at increased risk for numerous behavior problems. The project partners Oklahoma county 4-H educators with the Latino Community Development Agency (LCDA) and the Hispanic Heritage Committee (HHC) at Tinker Air Force Base to work with 120 youth and their families.

**Sponsors:** National 4-H Council, Office of Juvenile Justice and Delinquency Prevention

**PI/PDs:** Ron Cox

College of Agricultural Sciences and Natural Resources: Charles Cox

### **Peabody Picture Vocabulary Test 4 and DIAL-3 Language Measures Project**

The purpose of the project was to determine enrolled children's progress. Pre- to post-test score gains for the Peabody Picture Vocabulary Test 4 and DIAL-3 Language measures indicate that the preschool met funding agency goals that at least 45% of the children attain the minimum expected raw score gain based on age of child at pre-assessment; 57.89% of children attained this criterion on each test. For the DIAL-3 Concepts, 63.16% of children attained this criterion. For the Social Skills Improvement System and DIAL-3 Social Development, 84.21% of children attained this criterion.

**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.

**Sponsor:** Oklahoma State Department of Health

**PI/PD:** Kathie Bergmann

### **CDL - Rise Program**

The CDL - Rise program focuses on developmental needs of young children living with developmental disabilities/delays ranging in age from one year old through Kindergarten. The CDL - Rise program is an inclusive program where children living with developmental disabilities/delays and typically developing children interact in a developmentally appropriate learning environment. Children in the CDL- Rise program receive needed therapies to meet the goals in their IEP's or IFSP's. These therapies include speech, occupation, physical, swim, and music.

**Sponsor:** Oklahoma State Department of Education

**PI/PD:** Sue Williams

### **The Role of Emotions and Relationships in Promoting Mental Health among High Risk Girls**

The objective of the project is to determine biological protective and risk factors that reduce depressive symptoms and risky behavior (i.e., risky sex, substance abuse) among females ages 14 to 16. The focus is on biological markers associated with socio-emotional adjustment. Genetic and stress-related hormonal data are collected from teens, their parents, and peers in order to better understand the role of biological systems in the development of psychopathology. Pilot data on neurological processes involved in risk taking and social relationship are also being collected. These data will be used for future federal grant applications.

**Sponsor:** Oklahoma Center for the Advancement of Science and Technology

**PI/PDs** Amanda Morris, Michael Criss, Karina Shreffler

### **Tulsa Teen Pregnancy Prevention Coalition: Baseline Survey**

Although national trends in teen pregnancy have declined, rates in Oklahoma have remained stable over the past several years. Research investigating contraceptive use and attitudes towards teen pregnancy has found high levels of ambivalence, particularly among low-income, racial/ethnic minority groups. This study builds upon that research, developing a better understanding of contextual factors that produce ambivalence and the mechanisms through which it negatively affects goals and related behaviors. The project collects data from approximately 700 youth and their parents to form interventions designed to reduce risks and promote resilience among teens and their families in the Tulsa area.

**Sponsor:** George Kaiser Family Foundation

**PI/PDs:** Ron Cox, Karina Shreffler

### **Understanding Resilience in Adolescent Girls: Parent, Peer, and Emotion Dynamics**

The focus of this project is to examine how relationships with parents and peers can support emotion regulation and reduce risk among teenage girls living in high-risk settings. Adolescents participate in this

study over a four-week period. Teens participate in observational tasks with a parent and a friend, and for two weeks they report on their emotions and behaviors multiple times a day through phone interviews. Findings will be used to create programs aimed at strengthening relationships among high-risk girls in order to improve socio-emotional adjustment.

**Sponsor:** National Institutes of Health

**PI/PDs:** Amanda Morris, Michael Criss  
University of Pittsburgh: Jennifer Silk

## **SCHOOL OF HOTEL AND RESTAURANT ADMINISTRATION**

### **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/PDs:** Bill Ryan, Sheila Scott-Halsell

### **Investigation of What the Millennial Generation Prefers in Meetings, Conventions, and Events**

This research study investigated what attracts and satisfies individuals from the millennial generation to attend non-compulsory meetings and conventions. The findings indicate that millennials prefer “edutainment” utilizing cutting edge technology when attending events. Technology is also expected to be woven throughout the experience in forms of communication, team building, Wi-Fi availability and interactive games. Additionally, they want to personally benefit; may it be financial (scholarships or rewards), professional development related (networking or job opportunities) or socially (including service projects, destinations with many activities and fun social events).

**Sponsors:** East Carolina University, Professional Convention Management Association Education Foundation

**PI/PD:** Sheila Scott-Halsell

### **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.

**Sponsors:** 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.

**Sponsors:** Universidad del Este, Puerto Rico, University of Technology, Jamaica

**PI/PD:** Hailin Qu

### **Site Selection Study for an Exhibition Center in Kay County, Oklahoma**

The purpose of the project is to determine an optimal location for future exhibition center development in Kay County, OK. Six potential sites were identified and evaluated based on site evaluation factors such as potential events, potential visitation, market exposure, competition, future expansion potential, accessibility, accommodations, restaurants/retail stores, and attractions/leisure/entertainment. We recommended advantageous locations that maximize the economic impact in a host community as well as the demand for a new exhibition center. The findings and recommendations were presented to Kay County Free Fair Board.

**Sponsor:** Kay County Free Fair Board, Inc.

**PI/PDs:** Yeasun Chung, Gabriel Gazzoli, Hailin Qu

## **NUTRITIONAL SCIENCES**

### **Acute and Chronic Effects of Freeze-dried Strawberry Beverage on Cardiovascular Risk Factors in Subjects with Abdominal Adiposity and Dyslipidemia**

Berry anthocyanins have been shown to improve lipid profile in Chinese subjects with dyslipidemia while no such studies with whole strawberries have been reported in the US population. We investigated the effects of low and high doses of freeze-dried strawberries on serum glucose, insulin, and lipid profile, biomarkers of oxidative stress and inflammation, in a 12-week randomized controlled trial. Subjects with abdominal adiposity and dyslipidemia (n=15/group) were recruited at OUHSC and OSU, and randomly assigned to the low (25g/day) or high (50g/day) strawberry dose, or matched control (fiber and calories) group. The strawberry group consumed freeze-dried strawberry beverage (2 cups/day) and the controls consumed 2 cups beverage (fiber +calories) daily for 12 weeks. Blood draws, anthropometrics, blood pressure, and dietary data were collected at screen, 6 and 12 weeks of the study to determine chronic and acute effects of strawberry intervention. Serum or plasma samples are being analyzed for fasting glucose, insulin, lipid profile including total cholesterol, LDL-, and HDL-cholesterol, triglycerides, lipid particle size, and levels of oxidative stress (malondialdehyde, oxidized LDL, myeloperoxidase), inflammation (high sensitivity C-reactive protein, adiponectin, interleukins) and adhesion molecules. Repeated measures ANOVA will be performed using a 5% significance level. We anticipate a dose response effect in decrease in lipids, oxidative stress or inflammation following strawberry intervention versus controls.

**Sponsor:** California Strawberry Commission

**PI/PDs:** Arpita Basu

University of Oklahoma Health Sciences Center: Timothy Lyons

### **All 4-Kids: Resilience in Any Obesogenic Environment**

This project is part of a collaborative, multi-state pilot test of the All 4 Kids Curriculum developed by University of Nevada Cooperative Extension. The Oklahoma pilot was conducted during fall 2011 in two classrooms with a maximum of 40 children ages 3 to 5 years. The project was awarded the Jeanne M. Priester Award in the state/multi-state category in recognition of outstanding Cooperative Extension health programming.

**Sponsors:** University of Nevada-Reno, United States Department of Agriculture

**PI/PD:** Deana Hildebrand

### **BIFAD CRSP Model Evaluation**

This study reviewed the objectives and performance of the Collaborative Research Support Program (CRSP) model used by the US Agency for International Development (USAID) to fund research related to international agriculture development and food security at US universities. Other potential models for university collaboration with USAID were evaluated in terms of research advances, capacity building and impacts; strengths, weaknesses, opportunities and threats for the CRSP model were identified. Findings were compiled in a report which has been submitted to the Board for International Food and Agricultural Development for review and transmittal to USAID.

**Sponsor:** United States Department of Agriculture

**PI/PD:** Barbara Stoecker

### **Broadening Use of Choice Architecture Strategies in Middle-School Nutrition Settings and Understanding the Extent to Which Use of Strategies Impact Middle-School Students Selections of Fruits and Vegetables**

The purpose of the project is to broaden the use of choice architecture strategies in middle-school nutrition settings and study the impact on student's fruit and vegetable choices.

**Sponsors:** Cornell University Behavioral Economics in Child Nutrition Center, United States Department of Agriculture

**PI/PDs:** Deana Hildebrand, Tay Kennedy

Spears School of Business: Josh Weiner

### **Chickasaw Nation Social Marketing and Evaluation**

The overall goal is to develop participant-centered programs that promote benefits of healthful eating within the constraints of a limited budget, time and family needs. The collaborative effort is a long-term commitment for which the return is prevention of diabetes among Native American families living in Oklahoma through the establishment of healthy eating habits and a physically active lifestyle.

**Sponsors:** Chickasaw Nation, Oklahoma Department of Human Services, United States Department of Agriculture

**PI/PD:** Stephany Parker

### **Common Mechanisms Controlling the Response to Iron and Oxygen Availability**

The goal of the project is to advance understanding of iron metabolism, and how alterations in iron sensing contribute 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 sensitive to iron regulation. Our results indicate that HIF2a is a target of iron regulatory proteins (IRP) thereby further expanding our knowledge both of the pathways that are regulated by IRP and the potential roles of iron in health and disease.

**Sponsor:** United States Department of Agriculture

**PI/PD:** Stephen Clarke

### **Community Iodized Salt Distribution and Visual Information Processing of Infants at 6 Months of Age**

Effects of iodine supplementation to lactating mothers on visual information processing of their 6 month-old infants will be tested in iodine-deficient populations in Ethiopia. Also, effectiveness of Ethiopia's new salt iodization program in delivering adequately iodized salt will be evaluated by testing

iodine concentration of salt at all levels of production and consumption and by measuring urine iodine concentration of a random sample of community members.

**Sponsor:** Nestle Foundation

**PI/PDs:** Barbara Stoecker, Tafere Belay

### **Does Selenium Affect Inflammation and Bone Quality?**

Effects of dietary selenium (Se) and lipopolysaccharide (LPS) stimulation on immune markers were investigated in C57BL/6 mice. Pups of Se-deficient dams were weaned to depletion diet or diets with 0.2, 2.0 or 4.0 mg Se added/kg. Placebo or pellets releasing 0.1 µg LPS/g body wt/day were implanted subcutaneously four weeks before necropsy. Plasma glutathione peroxidase activity increased from 34 mU/L in Se-depleted to 1025 mU/L in the highly supplemented group. LPS induced an increase in number of Th-cells, B-cells, and monocytes compared to placebo. Our results add to the body of evidence that Se can affect the immune system.

**Sponsor:** Oklahoma Center for the Advancement of Science and Technology

**PI/PD:** Barbara Stoecker

### **Dried Plum's Mechanism of Action in the Prevention of Age-related Osteoporosis**

This project is an extension of an ongoing project designed to study how dried plum is able to restore bone lost due to aging. The previous study demonstrated that dried plum's effect on bone cells in aging animals begins soon after supplementation is initiated. This study has been designed to examine the short-term response of these bone cells to dietary supplementation with dried plum. The outcomes of these studies will provide information as to how bone metabolism is altered so that the mechanism by which dried plum affects bone can be determined. This information may lead to new therapeutic targets or the development of products from dried plum that could be included as a component of osteoporosis treatment.

**Sponsor:** California Dried Plum Board

**PI/PD:** Brenda Smith

### **Dysregulation of Bone Metabolism in Type 2 Diabetes**

Oklahoma has one of the highest rates of type II diabetes in the nation. Although complications such as cardiovascular disease continue to present serious health issues for diabetics, evidence has recently emerged that the risk of osteoporotic fracture increases ~2-fold in diabetics 5-10 years after diagnosis. The growing number of new cases of type II diabetes diagnosed each year suggests that the incidence of osteoporotic fracture will increase dramatically over the next two decades. In order to develop effective prevention and treatment strategies to reduce the incidence of these costly and debilitating fractures, it is crucial that we begin to understand the pathophysiology of compromised skeletal health in type II diabetes. Therefore, this project is focused on the study of how type II diabetes negatively affects bone health and is designed to provide important insights into the alterations in bone metabolism occurring in the early and later stages of this disorder.

**Sponsor:** Oklahoma Center for the Advancement of Science and Technology

**PI/PD:** Brenda Smith

### **Effects of Cranberries on Postprandial Metabolism in Obese Patients with Type 2 Diabetes Mellitus**

The purpose of the project is to investigate the postprandial effects of cranberries consumed with a fast-food style high-fat breakfast in postprandial rise of glucose, lipids, and biomarkers of lipid oxidation and inflammation in obese patients with Type 2 diabetes.

**Sponsor:** Cranberry Institute

**PI/PDs:** Arpita Basu

University of Oklahoma Health Sciences Center: Timothy Lyons

### **Effects of Mango on Bone Parameters in High Fat Diet-induced Obesity**

Consumption of high fat diet and one of the commonly used pharmacological therapies for modulating blood glucose, rosiglitazone, is associated with negative effects on bone. This study examined the effects of the addition of freeze-dried mango pulp or rosiglitazone to a high fat (HF) diet on bone parameters in mice. Freeze-dried mango (particularly at the 1% dose), similar to rosiglitazone, improved glucose tolerance and insulin resistance. Both the HF and HF+rosiglitazone diets had negative effects on bone while the mango diets maintained bone parameters similar to the control diet. Consumption of mango may provide an alternative approach to modulating blood glucose and maintaining skeletal health, though human studies are needed to confirm these findings.

**Sponsor:** National Mango Board

**PI/PDs:** Edralin Lucas, Brenda Smith, Stephen Clarke

### **Effect of Mushrooms on Endothelin-1 Secretion and Cancer**

Cancer is the second leading cause of death in the United States. Although the causes are multifactorial, diets low in anti-oxidants and rich in fat, which increases the risk of inflammation, are 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. Results from this study suggest that white button mushroom extracts have beneficial effects by blocking the synthesis of these proteins that would otherwise promote tumor cell growth.

**Sponsor:** Oklahoma Center for Advancement of Science and Technology

**PI/PDs:** Brenda Smith, Solo Kuvibidila

### **EFNEP Related Research, program Evaluation and Outreach**

The Expanded Food and Nutrition Education Program (EFNEP) was established by congress in 1968, when the plight of low-income American families, including hunger and malnutrition, came to public attention. The goal of EFNEP is to assist low-income audiences in acquiring the knowledge, skills, attitudes, and changed behaviors necessary for nutritionally sound diets, and to contribute to their personal development and the improvement of the total family diet and nutritional well-being. In 1969, the primary nutritional problems of EFNEP participants were energy inadequacy and vitamin and mineral deficiencies which resulted in growth deficits. Current nutritional problems of limited-resource families include energy excess, resulting in overweight and obesity, and early development of chronic diseases. Further, the science of nutrition has revealed new diet-disease relationships, national dietary guidelines continue to evolve, and new food choice behaviors emerge as more food is purchased and consumed away from home. Given these significant societal changes, the methods EFNEP currently uses to evaluate dietary quality and program impact need to be reexamined. EFNEP and extension leaders recognize the need to verify the validity of current approaches and/or develop new approaches for evaluating the EFNEP.

**Sponsor:** Oklahoma Agricultural Experiment Station

**PI/PDs:** Nancy Betts, Josh Phelps

### **Expanded Food and Nutrition Education Program**

This program focuses on helping families and youth improve behaviors in the following areas: Dietary intake as recommended by the *Dietary Guidelines* and *MyPlate*, food resource management skills and practices, nutrition practices and food safety practices. Participants increase their ability to select and buy food that meets the nutritional needs of their families and gain new skills in food preparation, food storage, and food safety. They learn to better manage their food budgets – including the use of Electronic Benefits Transfer (EBT) and Food Instruments and Cash Value Vouchers. Pre/post evaluation records indicate 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 Garrard

### **eXtension Families, Food & Fitness Community of Practice**

The purpose of the project is for researcher to serve as a member of the Executive Committee for the Families, Food, and Fitness CoP for eXtension.org. The purpose of these meetings will include editing content submitted from land-grant faculty across the country and creation of content for the site.

**Sponsors:** Mississippi State University, United States Department of Agriculture, National Institute of Food and Agriculture

**PI/PD:** Deana Hildebrand

### **Fulbright Scholar – Managing Climate Change Impacts on Biodiversity of Enset (*Ensete ventricosum*) and Traditional Wild Edible Plants in Enset Growing Homegardens of Southern Ethiopia**

The visiting scholar, from Ethiopia is supported by this project for his work on enset and other traditionally consumed wild edible plants.

**Sponsor:** Hawassa University

**PI/PDs:** Barbara Stoecker

Hawassa University: Admasu Tsegaye Agidew

### **Grown-ups Need Dairy Products Too!**

The project was designed to increase dairy product consumption by adults and improve calcium intake. A curriculum was developed that consisted of six lessons which could be used as a series or stand-alone by Cooperative Extension Service educators in Oklahoma, Texas, and New Mexico. Each lesson included information on a topic which could be a barrier for dairy consumption and included education on nutrition, preparation, and food safety and included a PowerPoint presentation, handout, tasting experience, and at least one activity. Handouts included basic, economical recipes using a minimum of accessible ingredients. Recipes were tested for ease of preparation and acceptability prior to inclusion in the curriculum. Lessons were piloted by eight Oklahoma Community Nutrition Education Program (CNEP) nutrition education assistants as supplemental lessons to the existing CNEP curriculum.

**Sponsor:** Southwest Dairy Museum

**PI/PDs:** Debra Garrard, Barbara Brown

### **Health Benefits of Mango Supplementation as it Relates to Weight Loss, Body Composition, and Inflammation: A Pilot Study**

Overweight and obesity is a major health problem worldwide. Obesity is associated with elevated levels of inflammatory mediators and is a risk factor for a variety of inflammatory-induced chronic conditions such as diabetes and heart disease. The objective of this pilot study is to investigate the effects of a 3 month dietary supplementation of freeze-dried mango (10 g/day) on reducing body fat and modulating inflammatory markers in obese individuals.

**Sponsor:** National Mango Board

**PI/PD:** Edralin Lucas

### **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 plums have potent effects on bone; however, our understanding as to how these effects are mediated has been limited. Results from these studies have shown that supplementation with dried plums suppresses the rapid bone turnover associated with postmenopausal bone loss and have helped us begin to identify the bioactive components in dried plums.

**Sponsor:** United States Department of Agriculture

**PI/PD:** Brenda Smith, Edralin Lucas

Veteran Affairs Medical Center and University of Oklahoma Health Sciences Center: Stanley Lightfoot

### **Integrating Primary-Care Practices and Community-based Programs to Manage Obesity**

The purpose of this project is to link primary care practices throughout Oklahoma with county-based community nutrition education programs offered by the Oklahoma Cooperative Extension Service Family and Consumer Sciences (OCES-FCS) Division. This project is designed to improve recognition and referrals of overweight and obese patients and to help OCES-FCS learn to respond to physician referrals. We will continue to track the success of referral initiation, patient enrollment in the nutrition programs, and patient, physician, and nutrition educator satisfaction using de-identified data already being collected through current enrollment and evaluation forms.

**Sponsors:** University of Oklahoma Health Sciences Center, Agency for Healthcare Research and Quality

**PI/PDs:** Debra Garrard, Deana Hildebrand

### **Mango Improves Bone Parameters in Ovariectomized Mice, a Model of Osteoporosis in Postmenopausal Women**

Women are at an increased risk for developing osteoporosis particularly when they reach menopause. Because of the side effects and cost of drugs for osteoporosis, dietary options that can delay the development of osteoporosis are being explored. This study is investigating the effects of mango on bone mass, microarchitecture, strength, and markers of bone metabolism in a mouse model of postmenopausal osteoporosis. Positive results from the study may serve as a foundation for testing the efficacy of mango in preventing bone loss in postmenopausal women.

**Sponsor:** National Mango Board

**PI/PD:** Edralin Lucas

### **Mango Supplementation Will Improve Glucose Response and Clinical Parameters of Pre-diabetic Subjects**

Type 2 diabetes is a common chronic disease in the United States and worldwide. This study is investigating the effects of daily supplementation of freeze-dried mango (10 g/day) for three months in improving blood glucose control and reducing body fat in pre-diabetic individuals. The findings of this research, if positive, will provide pre-diabetics with a dietary option for delaying or even preventing the development of type 2 diabetes.

**Sponsor:** National Mango Board

**PI/PD:** Edralin Lucas

### **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. 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

### **Molecular Coordination of Iron Homeostasis by MicroRNAs**

Understanding the molecular mechanisms that contribute to the regulation of cellular and systemic iron homeostasis increase our understanding of how iron status contributes to enhanced risk of disease. Little is known about how miRNA expression changes in response to alterations in nutrient status. The purpose of this project is to examine how iron status alters miRNA expression and impacts cellular metabolism. By taking an integrative approach, to date we have characterized the iron-deficient miRNA signature using a combination of next-gen sequencing and microarray strategies. The results provide insight into the coordination of iron homeostasis through multiple levels of cellular regulation.

**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

### **Nutrient Bioavailability-Phytonutrients and Beyond**

Body fat distribution, dietary and serum antioxidants, and insulin resistance were assessed in older Oklahoma women with and without metabolic syndrome (MetS). Participants with MetS were insulin resistant and had higher serum leptin and lower adiponectin than controls. The higher android: gynoid fat ratio in MetS was positively associated with insulin resistance and serum leptin but negatively associated with adiponectin. Dietary total antioxidant capacity of all participants was low which supported national survey data showing that Oklahomans have the lowest consumption of fruit and vegetable in the US.

**Sponsor:** Oklahoma Agricultural Experiment Station

**PI/PD:** Barbara Stoecker

### **Oklahoma Nutrition Education-Supplemental Nutrition Education Plan**

This program is a behaviorally focused science-based nutrition education intervention project focused on improving dietary quality in low-income adults and youth. Participants increase their ability to select and buy food that meets the nutritional need of their families and gain skills in food preparation, food storage, and food safety. They learn to better manage their food budgets – including the use of Electronic Benefits Transfer and Food Instruments and Cash Value Vouchers. Pre/post evaluation records indicate adults and youth 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 Garrard, Josh Phelps, Janice Hermann, Deana Hildebrand, Barbara Brown

### **Osteoprotective Activity of a Dried Plum Extract**

Current estimates indicate that 44 million Americans over the age of 50 years have osteoporosis or osteopenia. Despite advances in treatment options over the past two decades, the search continues for more effective, low-cost therapies with fewer side-effects. This search has resulted in the investigation of a number of promising natural compounds and products, including the dried fruit of *Prunus domestica L*, commonly referred to as dried plum. Among the natural products, dried plum has been shown to have unique properties in that it restores bone in animal models of postmenopausal and age-related bone loss. Given these unique properties, the components in dried plum responsible for the anabolic effects and their mechanisms of action warrant further investigation. Therefore, the purpose of this project is to investigate how different components of the dried plum extract affect bone metabolism so that the bioactive components can be characterized.

**Sponsors:** National Institutes of Health, National Center for Complementary and Alternative Medicine

**PI/PDs:** Brenda Smith, Edralin Lucas

University of Oklahoma: Robert Cichewicz

### **Postrandial Effects of Polyphenol-rich Cocoa Beverage on Glucose, Insulin, Lipids, Oxidative Stress and Inflammation in Type 2 Diabetic Patients**

This study aims to investigate the postprandial effects of cocoa supplementation on glucose and lipids, and surrogate markers of atherosclerosis in patients with Type 2 diabetes mellitus (T2DM). We aim to test the hypothesis that cocoa will lower high-fat mixed meal breakfast-induced postprandial rise of glucose, lipids and markers of atherosclerosis in patients with T2DM. While antioxidant-containing food groups, such as fruits and vegetables, cocoa, and tea, have been implicated in reducing CVD risks, few studies have been reported on the postprandial effects of these foods in DM. Consumption of high-fat foods and beverages is common to dietary habits in Oklahoma, and consequently exacerbated postprandial glycemia or lipemia contributes to the existing cardiovascular pathology associated with DM. Our expected results from this study will show the effects of consuming an antioxidant-rich cocoa beverage on postprandial metabolism of a high-fat diet versus placebo.

**Sponsor:** The Hershey Company

**PI/PDs:** Arpita Basu

University of Oklahoma Health Sciences Center: Timothy Lyons

### **Residual Limb Measures during Biomechanical Work-Related Activities in Adult Oklahomans with Trans-Tibial Amputation Due to a Traumatic Event**

Patients who undergo lower limb amputation due to a traumatic event or vascular disease are known to be at high risk for osteoporosis and fracture. Subsequent rehabilitation programs are intended to restore maximal function, promote long-term prosthetic use, and provide for optimal quality of life. Yet, it is apparent that we have not succeeded in curtailing the rate of osteoporosis and fracture, both of

which can result in permanent impairment and significant limitations in mobility later in life. This project focuses on advancing our understanding of the biomechanical forces that enhance functionality and bone health in lower limb amputees.

**Sponsors:** University of Oklahoma Health Sciences Center, Oklahoma Center for the Advancement of Science and Technology

**PI/PD:** Brenda Smith

### **The Role of Exercise in the Prevention of Bone Metabolic Changes Associated with Diet-induced Obesity**

Nationwide, the prevalence of obesity is on the rise, and Oklahoma is no exception. Approximately 31% of the state's population is obese and the prevalence of overweight in children is growing at alarming rates. Obesity is known to predispose adults and children to the early onset of chronic diseases, including cardiovascular disease, certain types of cancer and type 2 diabetes mellitus. In terms of skeletal health, obesity has been traditionally associated with decreased risk of osteoporotic fracture; however, recent evidence has suggested otherwise. This project is to begin to understand how exercise alters the bone metabolism in a model of diet-induced obesity and the implications of these changes on bone density, microstructure and strength. Understanding how obesity affects bone metabolism in the context of the growing animal is important for the development of appropriate prevention and treatment strategies for humans.

**Sponsor:** Oklahoma Agricultural Experiment Station

**PI/PDs:** Brenda Smith, Edralin Lucas, Stephen Clarke

Oklahoma Medical Research Foundation: Tim Griffin

### **School Meal Pattern Training**

The purpose of this project was to provide training to all Child Nutrition Program participants in the United States Department of Agriculture newly revised school meals standards. Technical training was provided to a team of Family and Consumer Science Extension Educators who subsequently conducted 28 regional workshops reaching approximately 1100 school nutrition professionals representing all 558 Oklahoma school districts.

**Sponsors:** Oklahoma State Department of Education, United States Department of Agriculture

**PI/PD:** Deana Hildebrand

### **Tobacco Settlement Endowment Trust Nutrition and Fitness Initiative Evaluation**

The Oklahoma Tobacco Settlement Endowment Trust (TSET) developed a strategic plan to advance nutrition and fitness environments in Oklahoma communities to address the prevalence of obesity. Grants were awarded to 15 consortiums/coalitions representing 21 counties. Under contractual agreement with TSET, OSU Department of Nutritional Sciences is evaluating the progress of the grant projects in 1) developing social capital assets to support healthful environments, 2) passing policies aimed at improving access to healthful foods and opportunities of physical activity in schools, workplaces and neighborhoods, and 3) tracking environmental and social norm changes around healthful eating and active living.

**Sponsor:** Tobacco Settlement Endowment Trust Nutrition and Fitness Initiative Evaluation

**PI/PDs:** Deana Hildebrand, Nancy Betts

### **Using Positive Deviance Principles to Identify Best Practices of Choice Architecture and Build Research Capacity with School Food Authorities**

The goal was to develop relationships among interdisciplinary researchers and the School Nutrition Association of Oklahoma (SNAO) for the purpose of identifying and expanding the use of affordable

choice architecture strategies to increase fruit and vegetable choices among middle school age students. An inventory of strategies was developed and found it to be acceptable with SNAO. Implementation of selected strategies in middle school settings increased students' selections of fruits and vegetables by 26%. A plate waste study found that students making selections from a free fruit/vegetable bar selected an average of 2/3 cups and discarded less than 1% of fruits/vegetables selected.

**Sponsor:** United States Department of Agriculture

**PI/PDs:** Deana Hildebrand

School of Hotel and Restaurant Administration: Sheila Scott-Halsell

College of Agricultural Sciences and Natural Resources: Kathleen Kelsey

Spears School of Business: Josh Wiener

### **Work Task Performance Measures in Amputees with Trans-Tibial Amputation Due to a Traumatic Event**

Lower limb amputation is a permanent, life-changing, musculoskeletal condition. Over 15,000 adults have undergone lower limb amputation due to a traumatic event in the United States in a recent 8-year period. Although efforts are made to prepare them to return to work through rehabilitation, those with lower limb amputation are disproportionately overrepresented among the unemployed. Chief among reasons for unemployment are residual limb pain and musculoskeletal injuries suffered during work-related activity. To determine the extent to which the mechanisms underlying these injuries are preventable, this study is designed to characterize them during work-related activities.

**Sponsors:** University of Oklahoma Health Sciences Center, Oklahoma Center for the Advancement of Science and Technology

**PI/PD:** Brenda Smith