

Research Initiation Program (RIP)
Award Recipients
2011-2012

The Research Initiation Program received an outstanding response to the call for proposals. The quality and quantity of proposals for this year's competition were generally great! The RIP Committee would like to have had sufficient funds available to award everyone, but due to the lagging economy only the following proposals have been selected for FY 2011-2012 funding

Dr. Chad Betters

Education Leadership, Counseling, and Professional Studies

School of Education and Human Performance

Amount Awarded: \$9,133.00

Project Title: *"The Impact of Case Management on Case Resolution in North Carolina Workers' Compensation Rehabilitation"*

Abstract: Presently, medical and vocational case management services are provided to injured workers with compensable injuries per state legislation, specifically Workers' Compensation statutes. However, there is minimal research that supports the benefit of case management service utilization toward successful return to work outcomes within the Workers' Compensation system. There is presently on-going consideration for reducing or eliminating select case management services within the North Carolina Workers' Compensation system. Given there is a lack of supportive research, it is critical to conduct an objective analysis so that findings may assist in the decision-making process. This proposal aims to analyze the hypothesis that case management services provided by private sector case management companies are essential to achieving successful Workers' Compensation case resolution for injured workers in North Carolina. The injured workers' perceptions of case management services will also be examined to determine if this promotes successful case resolution. Systematic sampling from three regional case management companies will be conducted to create a research sample of approximately n = 312 per an a priori power analysis. A quasi-experimental one-group design will be utilized to measure the research sample via a 17-item telephonic questionnaire consisting of demographic and rehabilitation-specific variables. Descriptive and inferential statistics, including backwards elimination multiple regression analyses, will be conducted to analyze the data to determine Workers' Compensation case management efficacy in North Carolina. The findings will be shared with the North Carolina Industrial Commission to enhance effective case management service delivery aiming to promote successful case resolution for North Carolina injured workers.

Dr. Stephanie Dance

Life Science

College Arts & Sciences

Amount Awarded: \$10,000.00

Project Title: *"Growth Inhibitory Effects of Novel Chemotherapeutic Agents on Mouse Mammary Tumor Cell"*

Abstract: Many Chemotherapeutic agents have been used to treat breast cancer, with varied outcomes depending on the specific subtype of breast cancer. To date, various laboratories have identified five distinctive subtypes of breast tumors, with one particularly aggressive subtype being basal-like breast tumors (BBT). The focus of my work over the next year will involve the characterization of mouse mammary tumors that mimic human BBT, using genomics, molecular genetics, and cell biology, in order

to develop improved therapies that are specific for this tumor subtype. This project will utilize a mouse mammary tumor cell line that our lab cultured from “humanized” mouse model that has been shown to better mimic in mice the genetic alterations seen with BBY formation by using CRE-LOX or gene knock-out technology. This mouse mammary tumor cell will be used by my laboratory in various chemotherapeutic studies that utilize biologically targeted agents to compare the cells sensitivities to various drug regiments that may have possible clinical relevance (i.e. diallyl disulfide, apigenin, selenium, chlorophyllin, and combinations of these agents). The proposed research will additionally involve the characterization of this mammary tumor cell line with the hope of elucidating the biology behind these tumors in an effort to advance the development of tailored treatment strategies for patients with various stages and subtypes of breast cancer ultimately resulting in a reduction of mortality.

Dr. Paige Dunlap
Human Performance and Sports Science
School of Education and Human Performance
Amount Awarded: \$9,725.00

Project Title: “Gang Affiliation and Disability: An Initial Investigation Into Rehabilitation Counseling Implications”

Abstract: This pilot study is intended to provide the first investigation into an understanding of how gang affiliation and disability coincide to impact rehabilitation counseling. There are over 800,000 gang members in the U.S. (including a large amount in the Piedmont Triad). Any of these individuals have or will become disabled due to gang violence and may not be aware of the services available to persons with disabilities. The objectives of this proposal are two-fold. The first is to determine the attitudes that gang members/former gang members have towards persons with disabilities. Second, determine if gang members are aware of the services available to persons with disabilities, including those of vocational rehabilitation counseling.

This proposal aims to survey gang members/former gang members at the largest gang intervention program in the country – Homeboy Industries, Inc. located in Los Angeles, CA. Homebody Industries has agreed to allow this research at its facility. It is proposed that with the assistance of a consultant, data will be collected at the facility and a monetary stipend will be given to each participant. Data will be analyzed in-house at WSSU.

Results from this study can be used to have a greater understanding of students in an urban population who come from similar backgrounds. Additionally, rehabilitation counseling literature has not previously addressed these clients in research. Therefore this study will increase the likelihood of other external grants to be used toward developing assessments and multicultural competencies for counselors working with this population.

Dr. Nick Hristov
Life Science: Center for Design Innovation
College Arts & Sciences
Amount Awarded: \$10,000.00

Project Title: “Investigating Collective Behavior in Animal Groups Using Advanced 3D Motion Capture in the Field”

Abstract: I propose to investigate the mechanism of collective behavior in free-flying Brazilian free-tailed bats (*Tadarida brasiliensis*) using ultrasound recording, high-speed video, thermal imaging, computer vision analysis and 3D modeling and visualization. These advanced digital techniques will be used to quantify for the first time the underlying structure and patterns of movement in dense columns

of emerging bats. Specifically, I will see to understand the sensory mechanisms responsible for the formation and maintenance of group cohesion from the perspective of the individual as well as the group. The collective behavior of large groups of animals is an impressive phenomenon that has attracted considerable scientific interest in recent years. Studies of self-organization in other social organisms have shown that seemingly complex patterns of movement at the level of group are explained by surprisingly simple rules from the perspective of the individual. Although colonial bats represent an attractive model for the study of self-organization in animal groups, there has been little research to examine their group behavior, likely, because of the inherent difficulty of studying free-ranging bats using traditional methods. The proposed work will produce the most complete experimental evidence to date for the underlying mechanism of grouping in a bat species. As the human population grows and humans continue to live in denser environments, some of the most challenging questions about human group behavior and organization might be answered with insight from other gregarious organisms like bats.

Dr. Carly Kemmis
Life Science
College Arts & Sciences
Amount Awarded: \$10,000.00

Project Title: “Vitamin D Signaling and Metabolism in hMSCs During Osteogenic Differentiation”

Abstract: My work focuses on the role of vitamin D₃ in human bone marrow-derived adult mesenchymal stem cells (hMSCs). Vitamin D₃ is a key regulator of bone formation in the body (an event termed osteogenesis). hMSCs have the potential to mature into a variety of cell types, such as bone, cartilage and muscle tissue (a process called differentiation). Thus, they represent a promising cell source for tissue engineering and regenerative medicine. Since cells used for these therapies will be exposed to vitamin D₃ in the patient’s body, it is important to understand how hMSCs respond to and process vitamin D₃. The first aim of this project is to evaluate how hMSCs respond to the exposure of vitamin D₃ during osteogenesis. I hypothesize that during differentiation to bone, the role of vitamin D₃ in hMSCs will change according to the current cellular needs. The second aim is to measure the ability of hMSCs to process and use available vitamin D₃. Previous studies have demonstrated that hMSCs have the capacity to metabolize vitamin D₃, thus I hypothesize that hMSCs will process vitamin D₃ and use it to regulate cellular functions. The work proposed in this application will provide an insight into how hMSCs will respond to vitamin D₃ in the body and will be the foundation for my future work at WSSU.

Dr. Sezgin Kiren
Chemistry
College Arts & Sciences
Amount Awarded: \$10,000.00

Project Title: “Intramolecular Reactions of Dihydropyridones Derived from N-Acylpyridinium Salts with Tethered Carbon Nucleophiles”

Abstract: The focus of this research program will center on the development of novel synthetic methods and strategies, and their implementation for the synthesis of biologically active, naturally occurring compounds. There is still a constantly increasing demand in the science of synthesis to find more efficient methods, since they play a crucial role in the synthesis of biologically significant entities, such as natural products of drug molecules. Today’s current synthetic efforts unyieldingly seek to uncover new, flexible and powerful synthetic tools to construct complex organic molecules. Of particular interest to this proposal is the study of intramolecular reactions of dihydropyridones derived from N-acylpyridinium salts with tethered carbon nucleophiles. The advantages of this strategy will be as

follows: (a) utilize the very well-established reactions, (b) employ simple, commercially available and inexpensive starting materials, (c) rapidly and efficiently generate structural complexity and diversity to reach alkaloids hosting piperidine motifs and their analogs for drug discovery.

Dr. David Kump
Life Science
College Arts & Sciences
Amount Awarded: \$10,000.00

Project Title: “Fat Increase in Different Mouse Strains Following Exercise Cessation”

Abstract: Obesity is an ever-growing problem in the United States and throughout the rest of the world, with over 50% of the United States populations now meeting the criteria for either overweight or obesity. In an effort to shed body fat, many individuals engage in exercise programs, but few succeed in maintaining regular exercise. Numerous studies show that both humans and animals increase fat mass in a short period when an exercise program is stopped: previous work by the PI shows that rats rapidly gain fat when voluntary running wheels are locked, with a substantial 48% increase in the mass of one fat pad in as little as two days! In order to better understand the mechanisms responsible for this rapid increase, the PI proposes the use of three different strains of mice; each strain has a different propensity to gain weight on a high-fat diet. The purposes are to 1) observe whether there will be a difference between the strains in the amount of body fat gained after exercise is stopped and 2) determine whether there are changes in genes that promote fat storage in different metabolic tissues. This data will support competitive external grant applications

Dr. Wanda Lawrence
Nursing
School of Health Sciences
Amount Awarded: \$9,985.00

Project Title: “Designing an Intervention for African American Women to Increase Their Knowledge Level and Awareness of Heart Attack”

Abstract: This project is important because the death rate for African American women who have heart attacks continues to be twice that of white women. Literature addresses three specific problems facing African American Women who have heart attacks: they are not aware of risk factors, they do not know signs and symptoms of a heart attack, and they delay treatment. The literature documents that African American women tend to present symptoms of a heart attack that are atypical, thus not responding in a timely matter, resulting in delay treatment and death. Receiving treatment as early as possible can delay morbidity and mortality. Consequently, if African American women do not recognize these atypical signs, then they will continue to delay initiating emergency treatment resulting in a continued increase in deaths related to heart attack. Few studies have examined heart attack symptom awareness among African American Women exclusively and this proposed research will fill the gap in the literature. I plan to use focus groups as the research methodology to verify if African American women ages 25-65 in Forsyth and Guilford Counties exemplify the atypical symptoms addressed in the literature. Although the majority of heart attacks occur between the ages of 40 -65 in African American women, women greater than 20 years old experience angina and high blood pressure, which are contributors of heart attack. Data obtained from these focus groups will be used to design a program to use as a strategy to address this critical health disparity in these counties.

Dr. Kimya Nance
Division of Nursing
School of Health Sciences
Amount Awarded: \$9,861.00

Project Title: “*The Effectiveness of a Community-based Intervention on Nutritional Knowledge, eHealth Literacy, and Health Literacy in Head Start Parents: A Pilot Study*”

Abstract: Ensuring adequate nutrition in early childhood is a national priority (U.S. Department of Health and Human Services, 2010). Nutrition plays a significant part in the psychosocial, emotional, and physical growth and development of preschool-age children (Brown et al., 2008; Grodner, Long, & Walkinshaw, 2007). Over the years, poor eating habits have contributed to an increased rate of obesity and anemia in children 2-5 years of age. (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Particularly at risk for nutritional problems are children from low income Hispanic and African American families for whom nutritional disparities exist (Ogden et al., 2010). Educational interventions that focused on ehealth literacy and nutritional knowledge of parents in this population may be helpful in increasing parent’s abilities to access, evaluate, and incorporate pre-school nutritional information. This study evaluates the effectiveness of a community-based intervention that addresses nutritional knowledge, ehealth literacy, and overall health literacy in head start parents using both computer-based training and an interactive educational approach. This pilot study will provide preliminary data for a larger study in which the team will seek external funding from the Department of Health and Human Services under the area of Understanding and Promoting Health Literacy. Knowledge gained from this study will benefit health educators, nurses, nutritionist and other healthcare providers, who are charged with educating Head Start parent/caregivers on child nutrition and health. The use of the intervention could be used as an ongoing strategy in addressing child nutrition and health literacy rates in the population.

Dr. Tennille Presley
Chemistry
College Arts & Sciences
Amount Awarded: \$10,000.00

Project Title: “*The Influential Role of Heat Acclimation on Diabetes*”

Abstract: Diabetes is a problematic disease for number of Americans, especially African Americans. Statistically, African Americans are two times more likely to develop diabetes than Caucasian Americans. The two main factors of diabetes are hyperglycemia and insulin resistance. During early states of diabetes, insulin is unable to move glucose into the body’s cells; this leads to a buildup of glucose in the blood known as hyperglycemia. Moreover, the imbalance of heat shock proteins (hsps), nitric oxide (NO) and reactive oxygen species (ROS) are troublesome in diabetes. The overall objective is to determine whether heat treatment or in combination with physical exhaustion, will improve several of the detrimental effects of diabetes. Accordingly, we will specifically study the 1) expression of hsps, as well as the generation of NO and ROS at normal conditions and 2) using treadmill mechanism, the generation of NO and ROS from the heat acclimated diabetic rodents will be assessed with the non-diabetic rodents. It is our expectation that both hsp expression and the availability of NO will augment (decrease ROS), and determine whether heat treatment can be used as a therapeutic tool for the treatment of diabetes; this will lead to a better understanding of some of the problematic concerns of diabetes. The data gathered here will help with the feasibility study and extrapolation into human subjects necessary to compete for extramural funding.

Dr. Rose Sackeyfio
English and Foreign Language
College Arts & Sciences
Amount Awarded: \$10,000.00

Project Title: “Ghana Film Project”

Abstract: The goal of the Ghana Film project is to develop an educational film that will demystify negative stereotypes about the African environment. The film would visualize examples of historical complexity of African life as well as images that reflect a holistic view of the contemporary African experience. The film would include illustrations of modern infrastructure in Ghana’s urban capital; explore the richness of visual arts, interviews with traditional rulers, and record visits to historical sites that have special meaning for African decedents in the diaspora. Since her independence from Britain in 1957, people flock to Ghana from the African diaspora because of the commitment to inviting African Americans and other diasporans to Ghana as a place of homage and a place to forge substantial dialogues and relationships that bridge multiple divides.

The purpose of this film is two-fold: to correct negative images through the lens of Ghana as a case study that will facilitate an informed examination of issues of history, tradition, modernity, and development. It will also create mutual and ongoing dialogues between Africans and African Americans both in Ghana and abroad and to help to break the barriers of otherness. Showing this film to students will contribute to understanding historical and contemporary questions about diaspora communities since there is a significant number African Americans in Ghana. The unique value of the film is the potential to bridge the gap between the past and present, and chart the future through collective efforts among Africans, African Americans and diasporic communities.

Dr. Jinghua Zhang
Computer Science
College Arts & Sciences
Amount Awarded: \$10,000.00

Project Title: “Developing Game-Like Instructional Course Modules to Enhance Student Learning”

Abstract: Statistics have shown that the computer science (CS) enrollment has been dropping across the nation at alarming rate. According to research, the fear of programming is one of the reasons why students do not want to major in CS. The traditional way of teaching Computer Programming focuses too much on the syntax of a programming language which can be difficult for student completely new to programming. Learning programming concepts in the gaming context will create high level of enthusiasm and excitement which will help them overcome the fear of programming.

The objective of the proposed project is to develop game-like instructional course modules for programming courses (CSC1310 and CSC1311). This project will have a significant impact on students’ understanding of computer programming and eventually have a positive impact on the retention rate in CS program. Students will gain confidence in programming and become well motivated to expand their capability, overcome the barrier and become successful in CS courses. This proposal outlines a one year project to design, develop, test and evaluate course modules. The project includes two major components: education component and assessment component. Education component involves developing game-like course modules to help students study the concepts that they have difficulty in learning, which include loops, parameter passing, file I/O, arrays and String operations. Assessment component includes establishing the advisory board and developing the evaluation plan. The advisory board, which consists of faculty and professionals from industry, will assist in project development and evaluation.