

Division of Research  
and Sponsored Programs

Annual Report 2012-2013



# DIVISION OF RESEARCH AND SPONSORED PROGRAMS

## Grants and Contracts Received in 2012-2013

ACADEMIC AREAS/CENTERS/OTHER MAJOR UNITS	NO. OF AWARDS	DOLLAR AMOUNT
College of Agriculture, Environmental and Nutrition Sciences (CAENS)	77	\$16,085,347
College of Arts and Sciences (CAS)	18	\$2,773,108
College of Business and Information Science (CBIS)	20	\$567,437
College of Engineering (CE)	60	\$6,941,831
College of Veterinary Medicine, Nursing and Allied Health (CVMNAH)	20	20



# INTEGRATIVE RESEARCH AND EXTENSION PROJECT PROVIDES NEW OPPORTUNITIES THROUGH WALMART PARTNERSHIP

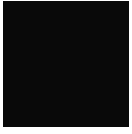
DEPARTMENT: College Of Agricultural And Sciences





# INTEGRATIVE BIOSCIENCES RESEARCH EXPERIENCES FOR UNDERGRADUATES (IBS-REU)

The Tuskegee University Integrative Biosciences Research Experiences for Undergraduates (IBS-REU) site provided research opportunities for undergraduates from across the country. The program was initiated in 2009 as a result of funding by the National Science Foundation, which provided support for the program for Summers 2009, 2010, 2011 and 2012, during which time 41 undergraduate students (12 males; 29 females) of diverse backgrounds participated. The program was also supported in 2011 and 2012, during which 29 females



# TUSKEGEE-CENTER FOR ACADEMIC EXCELLENCE AND INNOVATIVE LEARNING (T-CAEIL)

PRINCIPLE INVESTIGATOR: Luther S. Williams

DIRECTOR: Sherry N. King

In an effort to assist our students with mastering the necessary skills needed to be competent and skilled workers in the workplace and in alignment with the vision of TU, an intense student-centered and effective institution of higher learning was developed, namely, the Quality Enhancement Plan (QEP). The QEP solely focuses on the first year experience to successfully facilitate students' transition into college and sustain exemplary academic performance as well as overall human development. The QEP insures that students have a strong grasp of the core curriculum competencies of higher order skills of problem solving, critical thinking, analysis and synthesis.

In September 2010, the Tuskegee-Center for Academic Excellence and Innovative Learning (T-CAEIL), a Title III funded program, was established to actively support the University's mission and provide an environment for improving students' skill development as learners, thereby leading to success in coursework, careers, and life. T-CAEIL provides an environment conducive for learning to all students, especially first-year and at-risk students. It is a comprehensive learning unit designed to assist students with academic enrichment activities and services that will augment their learning for specific gatekeeper courses (GKC) and strengthen their competency skills of communications and mathematical and quantitative reasoning.

T-CAEIL is composed of two components: a) a Resource Center and Enrichment Labs to conduct communications and mathematical and quantitative reasoning activities for classes and b) a venue of access to ancillary learning tools such as tutorial/supplemental instruction, academic enrichment consultations, and a variety of specialized workshops that cater to



THE MOREHOUSE SCHOOL OF MEDICINE/TUSKEGEE UNIVERSITY/  
UNIVERSITY OF ALABAMA AT BIRMINGHAM COMPREHENSIVE  
CANCER CENTER (MSM/TUUABCC) PARTNERSHIP

PRINCIPAL INVESTIGATOR: Timothy Turner

CO-PRINCIPAL INVESTIGATOR: Roberta Troy

The tripartite Partnership between Morehouse School  
of Medicine (MSM), Tuskegee University (TU) and the





# THE TUSKEGEE UNIVERSITY CENTER FOR BIOMEDICAL RESEARCH/RESEARCH CENTERS IN MINORITY INSTITUTIONS (CBR/RCMI) PROGRAM

PRINCIPAL INVESTIGATOR: Timothy Turner

The National Institutes of Health established the Research Centers in Minority Institutions (RCMI) Pro



NSF EPSCOR: ENHANCING ALABAMA'S CAPACITY IN  
NANO/BIO SCIENCE AND SENSORS  
(GRANT # EPS- 1158862)

NSF CREST: CENTER OF EXCELLENCE IN  
NANOMATERIALS DERIVED FROM BIORENEWABLE  
AND WASTE RESOURCES (GRANT # HRD - 1137681)

NSF-EPSCoR: Enhancing Alabama's Capacity in  
Nano/Bio Science and Sensors The Alabama Exper -  
imental Program to Stimulate Competitive Research  
(ALEPSCoR) Research Infrastructure Improvement  
(RII) award from the National Science Foundation  
(NSF) (2008-2013 performance period) has created



# EXPERIMENTAL AND COMPUTATIONAL STUDIES OF MATTER UNDER EXTREME ENVIRONMENTS

PRINCIPLE INVESTIGATOR: Nosa O. Egiebor

This project, a Tuskegee University-led consortium consisting of Lawrence Livermore National Labo-

From left to right: Edwin Quasie (FAMU), Alfredo Correa (LLNL), Eric Schwegler (LLNL), and David Baah (Tuskegee University) at LLNL in July 2013

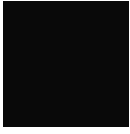
of Scientists & Engineers for national STEM human capacity pipeline, with special emphasis on minority students and researchers. In addition to the research areas specified above, the consortium will develop infrastructure to support a functional and sustainable team that is engaged in advanced education and capacity building. This will include the establishment of various MSI fellowship programs (including summer programs) in science and engineering of materials under extreme environments (MEE), including: (1) MSI-MEE undergraduate fellowship that will focus on capstone projects for undergraduate students, (2) MSI-MEE graduate fellowship that emphasizes practical training in research & experimental methods of relevance to matter under extreme environments.

Postdoctoral research fellowship opportunities will be developed, both at the national laboratory part -

ner (LLNL) and within the university partners. Access to large-scale experimental and computational facilities is a major aspect of this effort. The implementation of an exchange program for national and international researchers for short term and long-term visits to partner institutions and LLNL will be a significant component of the consortium activities. Other activities will include the development of (a) a summer school on high-temperature plasma physics, (b) a summer school on computational chemistry and materials, and (c) a summer school on experimental materials science and engineering.







# CENTER OF EXCELLENCE PROGRAMS IN COLLEGE OF VETERINARY MEDICINE AND ALLIED HEALTH

PRINCIPLE INVESTIGATOR: Tsegaye Habtemariam

Rationale Pharmacokinetic-  
Pharmacodynamic [PK-PD]  
driven new anticancer drug  
development

Amir K. Tiwari

The proposed drug development strategy will be demonstrated for a series of targeted tyrosine kinase inhibitors (quinazoline and pyrimidine analogues), a small molecular weight class of druggable compounds that are being rationally developed to possess anticancer activity. We first began by rationally designing epidermal growth factor (EGFR) receptor 1 and receptor 2 (HER2) inhibitors. In addition, these tyrosine kinase inhibitors are designed in mind to evade drug resistance phenotype such as being substrates of ABC transporters. In essence, being dually active and resistant proof, our intention is to ensure maximum chemotherapy. The motivation for this new drug development approach is based on limitations of current semi-empirical anticancer drug development approaches, which rely on a plethora of drug efficacy studies that lack predictive capability on how drugs should be used in humans. This project also aims on the use of preclinical studies in animals for the development of a new drug development paradigm. The rationale selection of anticancer agents will be based on the predictive pharmacokinetic [PK] - pharmacodynamic [PD] models that will be used to predict human PK-PD characteristics. These anticancer agents will be extremely useful in curing resistant and metastatic cancers

	Inventor(s)	Invention Title	Approval Date
2010-01	Clayton Yates	Kasio, an indicator/Biomaker of cancer progression and metatasis	10/26/2010
2010-02	Sandra Solaiman	Feed Supplement Products and Methods of Using Such Products for Improved Raising of Ruminant Livestock	10/26/2010
2010-03	Clayton Yates Timothy Turner	Establishment of a Novel non-malignant and malignant paired cell line derived from African American Prostate Cancer Patient	10/26/2010
2010-04	Cecilia Yates-Binder, Timothy Turner, Alan Wells, Jesse Jaynes, Richard Bodnar	The design and characterization of a peptide derivative of CXCL 10 a-helix and its inhibition of angiogenesis	10/26/2010
2010-05	Kokoasse Kpombluekou-A	Recovery of Phosphorus from Poultry Litter	10/26/2010
2010-06	Clayton Yates Jesse Jaynes Timothy Turner	The design and characterization of two Novel Lytic Peptides/LHRH Conjugates on the Inhibition of Prostate Cancer	Approved U.S. Patent No.: 8,461,118 (Corresponding to U.S. Application No.: 13/178,042)
2010-0602	Kyung C. Kwon	Capillary Viscometers for Use With Newtonian And Non-Newtonian Fluids	Approved U.S. Patent No.: 7,730,769 (Corresponding to U.S. Application No.: 11/439,699)
2010-07	Temesegen Samuel	Co-Culture Induced Penicillium Extrulite with anti-cancer cell proliferation Bioactivity	10/27/2010
2011-01	Heshmat Aglan	Quick Weld-Repair of Railhead Defects	04/19/2011
2011-02	Heshmat Aglan	Nanostructured Thermoplastic Polyimide Films	07/20/2005
2011-03	Abdela Woubit, Temesgen Samuel, Teshome Yehualaeshet	Detection of biothreat and foodborne pathogens	11/28/2011
2012-01	Teshome Yehualaeshet, Co Inventors: Temesgen Samuel and Woubit Abdela (TU University Faculty)	Modi cation of Polymerase Chain Reaction Sample Preparation to Differentiate Live and Dead Bacteria	9/20/2012
2013-06	Naga S. Korivi	Portable Smart Platforms for the Detection of Biological Pathogens and Chemicals	7/13/2013
2013-0602	Naga S. Korivi, Co Inventor: Kalyan K. Das	Photo Cells based on Donor and Acceptor Nano-particulate Conjugates in Conductive Polymer Blends	7/13/2013
2013-08	Sesha S. Srinivasan, P.C. Sharma, Jeremiah F. Wilson, and Sammie Ely III	Universal Tune-In Photocatalytic Reactor for Fuel Generation and Air Detoxi cation	9/30/2013
2014-01	ShaoWei Gong	An n-ratio automatic single-stage gear transmission	2/10/2014



AGENCY/SPONSOR	PRINCIPAL INVESTIGATOR	PROJECT TITLE	AMOUNT	PERIOD OF PERFORMANCE
Federal Railroad Administration	Aglan, Heshmat	Development & Evaluation of Continuous Welded Rail-Joints	\$ 97,554	





AGENCY/SPONSOR	PRINCIPAL INVESTIGATOR	PROJECT TITLE	AMOUNT	PERIOD OF PERFORMANCE
University of Georgia/USDA	Gurung, Nar	Comparison of on-farm Winter Feeding Strategies for Sustainable Meat Goat Production	\$14,500	03/15/2013-03/14/2015
HHS/NIH/NCRR	Habtemariam, T.	Endowment	\$265,368	07/01/2012-06/30/2013
USDA/APHIS	Habtemariam, T.	Conducting Risk Assessments and Risk Assessment Research and Providing Risk Assessment Training	\$200,000	09/22/2012-09/21/2013
HHS/NIH/NCRR	Habtemariam, T.	Endowment	\$2,089,250	07/01/2012-06/30/2013
HHS/NIH/HRSA	Habtemariam, Tsegaye	Center of Excellence (HBCU)	\$1,633,748	07/01/2012-06/30/2013
U.S. Department of Education	Habtemariam, Tsegaye	Academic Reinforcement and Instruction - Activity 1	\$973,420	10/01/2012-09/30/2013
U.S. Department of Education	Habtemariam, Tsegaye	Maintenance & Renovation of Instruction Facilities - Activity 6	\$218,069	10/01/2012-09/30/2013
U.S. Department of Education	Habtemariam, Tsegaye	Student Support Services - Activity 2	\$204,387	10/01/2012-09/30/2013
U.S. Department of Education	Habtemariam, Tsegaye	Advancing the Virtual Biomedical Learning Resources - Activity 3	\$189,683	10/01/2012-09/30/2013
U.S. Department of Education	Habtemariam, Tsegaye	Improvement and Maintenance of Development Public Relations Office - Activity 8	\$164,753	03/15/2013-03/14/2015
		U.S. Department of Education	Habtemariam, Tsegaye	Academic Reinforcement and Instruction - Activity 1 (Maintenance & Renovation of Instruction Facilities)



AGENCY/SPONSOR				













