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FAMU: A Leading HBCU Research Enterprise with a Global Presence

The research enterprise of Florida Agricultural and Mechanical University (FAMU) is emerging as a globally recognized organization that fosters relevant exploration, intellectual discovery, creative problem solving, and the effective dissemination of knowledge.

The FAMU Division of Research (DoR) was recently listed by the National Science Foundation (NSF) as the No.1 historically Black college or university (HBCU) in the nation for total research and development (R&D) expenditures. The ranking is indicated on the NSF Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions study, which was released in July 2015 and reveals that while the top 20 HBCUs combined had total R&D expenditures of $455.1 million, FAMU alone accounted for a staggering $51.1 million of that amount. The data was collected during a 2013 survey.

This ranking is proof that FAMU is committed to inspirational teaching and exemplary research through inventive partnerships at the local, state, national, and global levels.
The FAMU DoR is wholly dedicated to:

- Supporting the economic development agenda of the state and region
- Offering superior support services to faculty, staff, and students to pursue their research endeavors
- Encouraging collaboration and interdisciplinary research activities on campus and externally
- Promoting excellence in the academic programs and support areas
- Establishing national and international partnerships in research
- Effectively protecting, managing, and marketing intellectual property
- Ensuring the highest level of fiscal responsibility in grants management
- Providing expertise in resolving the needs of society
Elmira Mangum, Ph.D.
President
Dear FAMU Supporters:

It is a privilege to share with you the Florida Agricultural and Mechanical University (FAMU) 2014-2015 Annual Report on Research. Throughout this document, you will find highlights on advances in research and developments our faculty, students, and staff have made over the past fiscal year. It is my hope that this annual report will help you reflect on the robust research FAMU is engaged in on various levels.

As we enter a new era and transform our University into a best-in-class, land-grant doctoral research university with a global presence, future successes will stem from the investments we make presently. From Brazil and China to Africa and many other countries around the world, FAMU’s global footprint has indeed increased this past year and will continue in the days, months, and years to come.

As a result of our commitment to excellence, FAMU has remained vibrant in the midst of challenges whenever they arise. As president, I am proud to say that respected individuals and leaders from the local, state, and federal governments, as well as the private sectors, continue to look to FAMU as a resource for talented graduates and for solutions to complex research issues confronting our society. For these reasons and many more, FAMU has established itself as a viable source of research for the enhancement of state and nation.

Thank you for taking the time to read the 2014-2015 Annual Report on Research and for your continued support of FAMU.

Sincerely,
Elmira Mangum, Ph.D.
President
Dear FAMU Supporters:

*Research is not only alive and well at FAMU but it is also diverse, imaginative, and influential.*

The FAMU research mission is undertaken in support of our goals to promote excellence in our undergraduate and graduate programs, provide solutions to today’s problems, promote interdisciplinary perspectives on vital research topics, and support the economic development agenda of the state and region.

I congratulate the faculty on advancing our research agenda, as demonstrated by the projects reported in this document, as well as upcoming funded projects for the 2015-2016 fiscal year. I appreciate these as demonstrations of our commitment to further advance Florida A&M University’s research reputation.

I also thank the Division of Research, which, under the energetic leadership of Vice President for Research Timothy Moore, has supported faculty members and students in their research efforts, and encouraged and supported collaborations across the campus and across our community, region, the nation, and the globe. And through its support of our sponsored programs, the Division has strengthened our relationships with federal, state and local agencies, and corporate and foundation partners.

There is much to celebrate in this report. Please join me in congratulating the work of our faculty and staff in promoting our research mission.

*Sincerely,*

Marcella David  
Provost and Vice President for Academic Affairs
Dear FAMU Supporters:

I want to take this opportunity to tell you how excited I am about becoming a member of the Florida A&M University family. In this 2014-15 Annual Report, you will have the opportunity to learn more about FAMU’s achievements across a diverse span of research. The nation is in the midst of a period of reduced federal research funding. Despite these challenges, FAMU has continued to grow its research funding.

I consider it a privilege to showcase some of the significant strides FAMU’s Division of Research (DoR) is making to promote research and to advance academics. This publication showcases FAMU’s efforts toward becoming a best-in-class, land-grant doctoral research university with a global reach.

The FAMU DoR is committed to enhancing the University’s approach to addressing regional, national, and global challenges. Society has many challenges and our research enterprise is working hard to enhance knowledge and make solutions available to all. The pressing challenges of the 21st century demand that FAMU remains engaged in order to meet these challenges head on, especially for those in greatest need.

We have embarked upon the process of improving and transforming the DoR. We are committed to improving our client service and support. We will refine the entire research project life-cycle process so that our clients’ needs are met in a timely fashion. FAMU is the nation’s leading HBCU research university, and our researchers are changing the world by turning their ideas into solutions.

Sincerely,
Timothy E. Moore, Ph.D.
Vice President for Research
The FAMU Division of Research and the University’s research faculty play an integral role in the execution of Florida Agricultural and Mechanical University’s mission. FAMU is an 1890 land-grant institution dedicated to the advancement of knowledge, resolution of complex issues, and the empowerment of citizens and communities. The University provides a student-centered environment consistent with its core values. The faculty are committed to educating students at the undergraduate, graduate, doctoral, and professional levels, and preparing our graduates to apply their knowledge, critical thinking skills and creativity in service to society. FAMU’s distinction as a doctoral/research institution continues to provide mechanisms to address emerging issues through local and global partnerships. Building upon the University’s land-grant status, it will enhance the lives of our constituents through innovative research, engaging cooperative extension, and public service. While the University continues its historic mission of educating African Americans, FAMU embraces persons of all races, ethnic origins and nationalities as members of our University community.
Florida A&M University

Division of Research–Office of Technology Transfer

AUGUST 12, 2014
Karam Soliman & Elizabeth Mazzio
Herbal Composition & Method of Use for the Treatment of Cancer
PATENT # 8,802,161

SEPTEMBER 30, 2014
Mandip Sachdeva
Alpha-Melanocyte Stimulating Hormone as Topical Anti-Inflammatory Agent for the Treatment of Allergic Contact Dermatitis & Eczema
PATENT # 8,846,616

OCTOBER 21, 2014
Mandip Sachdeva
Surface Modified Multilayered Nanostructures for Dermal Delivery
PATENT # 8,865,206

NOVEMBER 18, 2014
Kinfe K. Redda & Madhavi Gangapuram
N-Substituted Tetrahydroisoquinoline Benzamides Benzene Sulfonamides as Anti-Cancer Agents
PATENT # 8,889,713

JUNE 9, 2015
Mehboob B. Sheikh, Devaiah Kambiranda, & Hermanth Vasanthaiah
Disease-Related Biomarkers Specific to Florida Hybrid Bunch & Muscadine Grape, & Uses Thereof
PATENT #9,051,381

JUNE 9, 2015
R. Renee Reams
Methods & Compositions for Prostate Cancer Metastasis
PATENT #9,051,619
Awards and Proposals for Five Fiscal Years

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<td>$142,352,444</td>
<td>$111,888,657</td>
<td>$107,501,379</td>
<td>$103,844,135</td>
<td>$108,967,667</td>
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<td>Awards Received</td>
<td>$53,148,420</td>
<td>$40,252,687</td>
<td>$42,445,679</td>
<td>$42,493,019</td>
<td>$47,067,995</td>
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Scan to view a complete listing of our FY 2014-2015 proposals and awards.
2014-2015
Awards by Academic Unit

College of Education ......................................................... $1.7M
College of Law ................................................................. $277,940
College of Social Sciences, Arts & Humanities ................. $292,009
FAMU Developmental Research School ......................... $703,169
School of Allied Health Sciences ................................. $700,000
School of Architecture ................................................... $123,023
School of Business & Industry ..................................... $600,375
School of Graduate Studies ........................................... $100,000

TOTAL AMOUNT: $47M

2014-2015
Proposals by Academic Unit

College of Social Sciences, Arts & Humanities .......... $2.5M
FAMU Developmental Research School ................... $391,002
School of Allied Health Sciences ......................... $2M
School of Architecture .................................................. $123,444
School of Nursing ......................................................... $5,000
School of Business & Industry ............................... $609,590

TOTAL AMOUNT: $109M
LEADING THE WAY
Professor Henry Neal Williams, Ph.D., is globally recognized as one of the foremost experts on the ecology of the bacterial predators, Bdellovibrio and like organisms, which are widely distributed in the environment.
Doctoral Research Degrees
Awarded 2014-15

Claudette Harrell, Ph.D.
Educational Leadership and Administration

Priscilla S. Jenkins, Ph.D.
Educational Leadership and Administration

Taralyn Monsanto-Dewese, Ph.D.
Educational Leadership and Administration

Antionette A. Gardner, Ph.D.
Educational Leadership and Administration

Olayinka O. Reis, Ph.D.
Educational Leadership and Administration

Charlie L. Martin, Ph.D.
Civil Engineering

Georges B. Adunlin, Ph.D.
Pharmacy-Pharmaceutical Sciences

Natalie N. Redmon, Ph.D.
Pharmacy-Pharmaceutical Sciences

Adrienne P. Stephenson, Ph.D.
Pharmacy-Pharmaceutical Sciences

Marquita L. Johnson, Ph.D.
Pharmacy-Pharmaceutical Sciences

Maryam Agharahimi, Ph.D.
Pharmacy-Pharmaceutical Sciences

Michelle M. Dahnke, DrPH
Public Health

Stephanie L. Solomon, DrPH
Public Health

Cynthia Seaborn, DrPH
Public Health

Adrian C. Cooksey, DrPH
Public Health

Avalon R. Adams-Thames, DrPH
Public Health

Babajide B. Sadiq, DrPH
Public Health

Staci R. Brown, Ph.D.
Physics

Patrice N. Jackson-Edwards, Ph.D.
Physics

Anteneh G. Tefera, Ph.D.
Physics

Amy E. Edwards, Ph.D.
Environmental Science
The FAMU Division of Research held its Sixth Annual Principal Investigators’ Appreciation and 2015 Researchers of the Year Awards during FY 2014-2015. The award ceremony was appropriately themed, “In Recognition of Research Excellence with Caring.” During the event, Vice President for Research Timothy Moore recognized all of FAMU’s outstanding principal investigators, and also honored two faculty researchers for their respective achievements in their areas of focus.

**Anthony Ananga**, Ph.D., an associate professor of food technology at the College of Agriculture and Food Sciences received the Emerging Researcher Award plaque and honorarium. Ananga has provided groundbreaking leadership in the University’s research of flavonoids, key antioxidants that produce natural byproducts such as anthocyanin, proanthocyanandin, and flavanoid pigments. Flavanone 3’Hydroxylase (F3’H) is a key enzyme in the biosynthesis of flavonols, anthocyanindins, and proanthocyanindins. Under his guidance, FAMU student **Jasmine Hall made history** as the first young scientist to clone and characterize the F3’H gene in muscadine grapes.

**Carl B. Goodman**, Ph.D., assistant dean and professor of Pharmacology and Toxicology in the College of Pharmacy and Pharmaceutical Sciences, received the Research Excellence Award plaque and honorarium.

Goodman is the principal investigator for the University’s Bridges to the Baccalaureate in the Biomedical Sciences 2015 Summer Research Experience Program. The goal of the program is to cultivate and increase the number of qualified African-American, Hispanic, Native American, and other underrepresented minority students transferring from Tallahassee Community College (TCC) to FAMU with a desire to obtain a four-year degree in biomedical sciences from FAMU.

Dr. Ananga (left) and Dr. Goodman (far right) receive plaques in honor of their research work from President Elmira Mangum, Ph.D., and Vice President for Research Timothy Moore, Ph.D.
A team of Florida Agricultural and Mechanical University (FAMU) researchers took home the **first place award** in June at the National Science Foundation Innovation Corps (NSF I-Corps) competition held in Atlanta.

The competition brought together 21 teams from across the Eastern U.S. comprised of the most innovative researchers, including Harvard. Researchers were challenged to transfer their knowledge into products and processes that benefit society and show the potential for broader applicability and impact in the commercial world.

Principal Investigator Y. Ping Hsieh, Ph.D., a professor in the FAMU College of Agriculture and Food Sciences Center for Water and Air Quality, led FAMU’s team. Biochemist Xiaoling Ding, Ph.D., served as the team’s entrepreneur lead, and Lawrence Tinker, Ph.D., of the Florida Institute for the Commercialization of Public Research, served as the team’s mentor.

The FAMU team of innovators represented the only historically Black university or college (HBCU) selected to participate in the competition. The University outpaced several of the nation’s top research programs, including Harvard, with their project titled, “Multi-Element Scanning Thermal Analysis” or MESTA.

The rapid MESTA technology is poised to benefit society in areas such as domestic security and environmental health. Within just 30 minutes, MESTA can characterize and analyze the materials that comprise a variety of complex compounds from the air and crude oil to mysterious white powders and wetland soils.
Research is to see what everybody else has seen, and to think what nobody else has thought.

—Albert Szent-Gyorgyi
FAMU Hosts Father of DNA During Cutting-edge Nanotech International Workshop

FAMU hosted the International Workshop on Biologically Enabled Self Assembly in collaboration with the University of California - Davis and the International Institute for Complex Adaptive Matter in May. The keynote speaker was Ned Seeman of New York University, known as the father of DNA (Deoxyribonucleic acid) technology. The workshop showcased one of the University's most prominent priorities: establishing collaborative relationships with leading scientists from around the world.

The workshop focused on DNA's potential as a blueprint for useful non-living structures, such as solar power or the cures for different diseases. FAMU Physicist Mogus Mochena, Ph.D., one of the event's organizers explained that the workshop also showcased how DNA technology might be able to unlock the secrets of degenerative diseases, such as Alzheimer’s, and underscored the importance of how proteins assemble, how they come together, and how knowledge of these processes can provide answers to some of today's most important problems.

The three-day event included 20 scientists giving presentations and meeting with FAMU students and faculty. Event sponsors included The Institute for Complex Adaptive Matter, University of California-David Division of Research, National Science Foundation, FAMU's College of Science and Technology, the FAMU Sustainability Institute, and the Division of Research.

Participants at the FAMU-hosted Biologically Enabled Self-Assembly International Workshop came from around the globe, including New York University, University of California-Davis, University of California-Los Angeles, University of California-Riverside, University of California-Santa Cruz, University of Michigan, Massachusetts Institute of Technology, Northwestern University, University of Cambridge-United Kingdom, Peking University -Beijing, University of Washington, North Carolina State University, National Institutes of Health, University of Queensland-Australia, Lawrence Berkeley National Laboratory, Florida State University, along with faculty and students from Florida A&M University.
FAMU is committed to:
Advancing Knowledge, Resolving Society’s Complex Issues, Empowering Underserved Populations
FAMU Provost Marcella David and Siaya County, Kenya Governor Cornell Rasanga Amoth signed a memorandum of understanding (MOU) in June. The MOU will open the door to enhancing educational, and research opportunities between FAMU and Siaya County as well as provide a roadmap for further expansion by FAMU in Kenya and East Africa.

The MOU will enhance access to quality education for the people of Siaya County. It will also provide for joint educational and research activities, exchange of students and scholars, and increased funding opportunities for the College of Agriculture and Food Sciences (CAFS) from agencies such as USAID, the U.S. Department of Agriculture, and other global organizations.

Siaya County is located in the southwest part of Kenya and has a population of more than 840,000. It is one of 47 counties in the nation. Under the Constitution of Kenya, county governments oversee county health services, trade development, pre-primary education, implementation of specific national government policies, and public work and services. The MOU also supports President Barack Obama’s initiative to improve food security in Siaya County. President Obama’s grandmother is currently an ambassador of food security in Siaya County.
Florida A&M University hosted the inaugural EnergyWaterFood Nexus Summit (EWFN), an international conference that connected a global network of over 300 researchers, innovators, and other stakeholders working in the energy, water, and food sectors. Participants from as far away as South Africa, Hungary, and India joined local and regional attendees to share knowledge. Led by the FAMU School of the Environment with collaboration from the Sustainability Institute and several colleges and schools, the summit also included co-sponsors from the City of Tallahassee’s Environmental Policy & Energy Resources Division, the U.S. Department of Energy ARPA-E, as well as private sector contributors like SalterMitchell and Yum! Brands.

The EnergyWaterFoodNexus is a new science enterprise launched at FAMU through an international, public-private partnership that seeks to provide sustainable and innovative solutions for global security.

During the summit, participants from various disciplines had the chance to learn about and work together to tackle complex issues affecting every community. The lineup of renowned speakers included Will Allen, CEO of Growing Power, the New York Times best-selling author of “The Big Thirst” Charles Fishman, and European Commission Head of Innovation Istvan Kenyeres.

Summit chair and dean of the FAMU School of the Environment Victor Ibeanusi, Ph.D., explained the purpose of the EWFN, stating that the intent of the EWFN is to brand a new science enterprise designed to provide solutions to the global energy, water, and food crisis. Students can also interact with
international leaders in agriculture, business research, technology, and more.

Odemari Mbuya, faculty director of the FAMU Sustainability Institute and professor in the Center for Water and Air Quality, commended the EWFN in its ability to help ensure that there are solutions to our globally vexing problem.

Kirit Shelat, the chair of India’s National Council for Climate Change and Sustainability Development, led a contingency of scientists and agronomist from India to attend the summit. The NCCSD signed a memorandum of understanding with FAMU to collaborate on research, faculty, and student exchanges.

Speaking on the prospects of the MOU between the two organizations, Shelat said, “FAMU can make available appropriate technology related to climate-smart agriculture and smart city management for its replication in India.”

The summit presented several themes and tracks for participants, discovering emerging innovations, understand policy implications and accelerate technology. Furthermore, Idea Hack sessions, aimed at solving complex problems that require multidisciplinary and diverse perspectives, brought together multidisciplinary young and experienced collaborators to “pitch” a challenge and open up for an informal brainstorming session.

Will Allen, CEO of Growing Power, addresses Summit attendees.
PREPARING THE NEXT GENERATION
Kendall Strickland, a senior agribusiness major at FAMU, placed second on a research project presented at the 30th Annual Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) Career Fair and Training Conference in March.

Strickland received national recognition in the poster category of the competition for a project titled “The Economic Value of Palm Trees in Hotel Landscaping.”

The primary focus of the research is to determine the value of palm trees at hotels in areas such as Aruba. Since visitors travel to places like Aruba for its tropical environment, Strickland’s study addresses whether a low amount of palm trees could ultimately mean fewer visitors to hotels.

Inspired by his service as president of the FAMU student chapter of MANRRS, Strickland said receiving the award was rewarding for him. He also received recognition of the project during a recent College of Agriculture and Food Sciences (CAFS) Research Forum at FAMU that featured national leaders in agriculture.

In addition to his role as a student leader, Strickland is also a full scholarship recipient of the U.S. Department of Agriculture’s 1890 National Scholars Program. Strickland will complete a two and a half year employment stint at the Department upon graduation.
FAMU Director of Counseling Services Yolanda K. H. Bogan, Ph.D., directs the three-year grant from the Substance Abuse and Mental Health Services Administration (SAMHSA).

According to Bogan, one of the objectives of the grant is to create a campus culture that encourages students to learn and practice alternative ways of dealing with stress as a method of drug abuse prevention.

Bogan explained that drug abuse often opens the door for life-altering and life-threatening diseases. She wants students to understand that developing such habits are counter-productive to their educational and professional goals.

The grant will support a curriculum for undergraduate students enrolled in FAMU’s First-Year Experience Program, which allows the university to directly reach and impact students as they began their college experience. The First-Year Experience Program assists students in making a successful transition, academically and socially, from high school to college. Also, the program reinforces critical thinking and behaviors that lead to academic success and assists students with understanding how to make informed decisions.

The grant will also provide the university with resources to train students to become certified peer educators for prevention and informational programs. Students will also play an integral role in helping shape the program’s awareness campaigns to ensure they are linguistically relevant, age-appropriate, and culturally consistent.

Dr. Bogan, who is a professor in the Department of Psychology, College of Social Sciences, Arts and Humanities, received her Ph.D. degree in Clinical Psychology from the University of Georgia where she studied the long-term impact of mislabeling childhood sexual abuse. She completed her internship at the Baylor College of Medicine and was a chief intern for the Sexual Assault Program. Dr. Bogan has been a licensed psychologist for over 20 years and has worked in private practice and faith-based settings.

Her most recent externally-funded grants (2013-2018) focus on educating African Americans and other minorities on finances and retirement securities and (2013) increasing the behavioral health service capacity at FAMU through certified peer educators in the Department of Psychology. Dr. Bogan is currently seeking highly motivated graduate assistants with an interest in cultural strategies in preventing and treating suicide, substance abuse, HIV/AIDS, and exercise to work on her research team.
FAMU Smart Academies are Critical to Leaving No Child Behind

The FAMU College of Education in collaboration with the FAMU Developmental Research School (DRS) received a second five-year grant award, becoming one of the 21st Century Community Learning Centers (CCLC) model programs. This year’s award was made possible as the result of the project’s exemplary implementation over the past five years.

The CCLC, a key component of the No Child Left Behind Act, is strategically designed to provide a range of high-quality services to support student learning and development by engaging the students in academic and personal enrichment, as well as other activities engineered to complement the students regular academic program, including the provision for tutorial services to help students, particularly those who attend low-performing schools, to meet state and local student academic achievement standards in core academic subjects, and offer families of students served by community learning centers opportunities for literacy and related educational development.

FAMU SMART Academies, the key initiative of the CCLC, is a “School-Within-A-School,” after school program, housed at FAMU DRS. Commensurate with the federal and state education mandates, FAMU SMART Academies embrace the opportunity to positively influence student performance through the implementation of innovative educational practices. Select academic disciplines are offered in after-school, and summer programs for students enrolled in grades K-12 at DRS.

FAMU SMART Academies feature five academies in the areas of science, mathematics, the arts, reading and technology. The academies provide opportunities that address the academic needs of students through project-based learning activities, homework assistance, tutoring, field experiences, career exploration, service learning, character education, physical education, recreational activities, and dropout prevention. All instructions are delivered through curricular materials that are research-proven. Academies offer parent involvement opportunities to facilitate character development and encourage family literacy. The FAMU SMART Academies program is primarily designed to support DRS academic structure; enhance students’ performance on the Florida Standards Assessment (FSA); increase the number of students graduating from high school; improve the academic performance of at-risk students; and facilitate at-risk students’ admission to college.

Recognized as an exemplary project, FAMU SMART Academies’ project concept was recently reviewed by a neighboring school district as a possible program to replicate to address academic deficiencies of its population.
Second Annual STEM Day Exceeds its Mission

The College of Science and Technology (CST) hosted the Second Annual Science Technology Engineering Mathematics (STEM) Day. This is an outreach event for middle and high school students intended to increase interest in pursuing STEM careers. STEM Day is one of the signature initiatives of the college’s National Science Foundation (NSF) Historically Black Colleges and Universities – Undergraduate Program (HBCU-UP) project. Over 350 participants attended this year’s event; including parents, faculty, staff, and 200 middle and high school students. The theme of STEM Day 2015 was “FAMU CSI “Crime Scene Investigation,” which involved the use of various “crime scenes” to provide students with hands-on, problem-solving experience in STEM disciplines.

During the day, there were speakers from all walks of life conducting concurrent sessions and workshops, including Rashad Sullivan, M.D., a FAMU graduate and orthopedic surgeon at Wake Forest Baptist Medical Center. Dr. Sullivan shared his personal journey on becoming a physician along with the obstacles he overcame to bring his dream into fruition. Other speakers included: Mark Branch (aka DJ Scientific), an aerospace engineer from NASA; Clifford Stokes, Jr., an information technology consultant; and Desmond Stephens, Ph.D., FAMU associate professor of mathematics. Dr. Stephens’ workshop showed students how mathematics and the basic interest principle can help them avoid debt, finance college, and save.

A portion of the day also exposed the parents and students to the various programs offered at FAMU. The CST partnered with 13 University departments for the Science Expo during STEM Day. The students and their parents had an opportunity to talk with representatives of programs such as the College of Pharmacy and Pharmaceutical Sciences, the FAMU-FSU College of Engineering, and the School of Nursing. The success of STEM Day 2015 was made possible due to the involvement of the FAMU Industry Cluster and on-campus support. Campus support came from the College’s NSF HBCU-UP grant, the Division of Research, the Office of Student Activities, and the NSF-partnered Florida Georgia Louis Stokes Alliance for Minority Participation (FGLSAMP).
FAMU, Domi Station to Provide Innovation Opportunities for Students

FAMU has signed a historic agreement with North Florida’s Domi Station, located at 914 Railroad Ave. in Tallahassee, to provide its students with a space to incubate their business ideas.

FAMU’s School of Business and Industry (SBI) facilitated the partnership with Domi Station. It offers incubator and co-working space with the goal of establishing a maker’s community and inspiring the development of high-impact startup companies among students. The incubator program invests in early-stage entrepreneurs and accelerates their growth by providing access to a network of mentors, investors, and collaborators.

Through the partnership, graduate and student entrepreneurs of all ages will be exposed to experiential learning and have access to the many services offered by Domi Station. These services include four dedicated incubator spaces for FAMUans to house their businesses at Domi, where they will receive mentoring on the viability of their business models, and on the funding and staffing needs for their businesses, according to Shawnta Friday-Stroud, Ph.D., dean of SBI.

According to SBI and Domi Station organizers, students get exposed to all sides of business administration as well as in-depth industry knowledge in developing a product or service. Additionally, they will be eligible for all the rights and privileges of any Domi member, including spending time with and having access to professionals with backgrounds in intellectual property law, strategic marketing, and venture capital.

Christine Urban, the incubator manager of Domi Station, said students would gain the first-hand experience on the process of building a company from the ground up.

*It offers incubator and co-working space with the goal of establishing a maker’s community and inspiring the development of high-impact startup companies among students.*
RESEARCH AND INNOVATION COLLABORATION
Leaders from the Florida Board of Governors, FAMU, and Florida State University celebrated the rollout of the Targeted Educational Attainment (TEAm) grant program, a collaborative effort to align university and college degrees with the state’s future workforce needs. Students began the program fall semester 2014.

State University System Chancellor Marshall Criser III, Florida Department of Economic Opportunity Secretary Jesse Panuccio, then-FSU Interim President Garnett S. Stokes and FAMU President Elmira Mangum, and FAMU College of Science and Technology Dean Maurice Edington united to announce the historic grant.

With $3 million allocated by Gov. Rick Scott and the Legislature and awarded by the Board of Governors, the joint program, “Expanding North Florida’s IT Career Pathways,” is designed to create a pipeline from elementary school onward that prepares students for careers in the high-wage, high-demand sector of computer information and technology.

Partners in the effort include school principals, superintendents, state and private colleges and private businesses. Designed to create a pathway for North Florida information and technology graduates and supply a direct pipeline into the workforce, the Expanding North Florida’s IT Career Pathways program helps create innovative new courses taught by faculty who are leaders in the information and technology field.

The program is expected to increase the number of bachelor’s degrees in computer science and computer engineering and will draw students into the pipeline early, nurturing their skills and interests and connecting them with industry partners for internships and career opportunities.
Improvised Explosive Devices (IEDs) have emerged in Iraq, Afghanistan and other locations throughout the world as an unanticipated and deadly threat to U.S. and Allied military forces. Although these weapons are typically not technologically advanced, they have nevertheless become one of the greatest threats to our peaceful forces, both military and civilian. Moreover, a potential biological, chemical or radiological threat that may occur against a military or civilian population is an eminent concern to our nation. To that end, the Department of Energy/National Nuclear Security Administration (DoE/NNSA) is in need of fast and reliable methods to determine the signatures associated with the present threat. The type and extent of the unknown agents that may be present to combat them swiftly, effectively and efficiently is paramount. Moreover, individuals trained in advanced spectroscopic and radiological techniques that rely on a multidisciplinary understanding of subjects are required to maintain our nation’s technological readiness.

To address these issues, the Consortium for Research on the Science and Engineering of Signatures (ROSES) was formed via a $2.5 million grant from the U.S. Department of Energy, under the leadership of Assistant Dean of the College of Science and Technology Lewis E. Johnson, Ph.D.

**ROSES is a partnership of academic and national laboratories for developing and expanding the pipeline of individuals trained in radiological, elemental and isotopic analysis** of the signatures that denote the materials of interest. These include but are not limited to energetic materials, nuclear materials, and biochemical toxins and pathogens. Moreover, the consortium wishes to continue the mission of training the next generation of scientists to further tackle these problems.

Through a collaborative effort between Alabama A&M University, Alabama State University, Alcorn State University, Delaware State University, Fisk University, Florida A&M University, Morehouse College, Prairie View University, Southern University and Southern University New Orleans, and Los Alamos, Y-12 and Pacific Northwest National Laboratory, the consortium will seek to advance the basic science and engineering behind the understanding of complex detection methods and applications.

Building on President Barack Obama’s Climate Action Plan and his administration’s Better Buildings Challenge, the U.S. Department of Energy (DOE) has announced that FAMU has committed to making its entire portfolio of buildings 20 percent more energy efficient within 10 years by joining the Better Buildings Challenge. Led by Abena Ojetayo, director of the FAMU Sustainability Institute and Sameer Kapileshwari, assistant vice president for Facilities, Planning, Construction and Safety, FAMU will work with the DOE to share its successful efficiency models and help pave the way for other organizations to follow.

FAMU will soon complete an expansive energy performance contract that is slated to yield millions of dollars in energy cost savings. Also, FAMU will undergo an assessment and planning process in the next six months to identify strategic opportunities to achieve energy efficiency goals. The Sustainability Institute, working directly with the University’s Office of Facilities Planning & Construction, will steward this commitment and develop a plan. Faculty and students will also be involved in creating new learning experiences designed around this commitment.

FAMU joins a diverse set of more than 20 other new partners, including six multifamily developments announced by the White House. These new partners bring with them fresh perspectives and leadership in newly represented sectors totaling more than 70 million square feet of fast-food, restaurant, manufacturing, university, and government facilities.

A cornerstone of the President’s Climate Action Plan, the Better Buildings Challenge supports the goal of doubling American energy productivity by 2030 while motivating corporate and public-sector leaders across the country to save energy through commitments and investments. More than 250 organizations are partnering with the Department of Energy to achieve 20 percent portfolio-wide energy savings and share successful strategies that maximize efficiency over the next decade. Across the country, Better Buildings Challenge partners are deploying energy efficiency projects at more than 9,000 facilities, with more than 2,100 buildings expected to improve efficiency by at least 20 percent, and another 4,500 by at least 10 percent, compared with their baseline years.
FAMU students, postdoctoral associates, and faculty with collaborators from other universities made an extraordinary accomplishment this year in the publication of a paper in one of the world’s highest ranked microbial ecology journals, the International Society of Microbial Ecology Journal (ISMEJ). The article entitled “Halobacteriovorax, an underestimated predator on bacteria: potential impact relative to viruses on bacterial mortality,” was described by a journal editor as “a major advance in the field.” A total of eight undergraduate and graduate FAMU students in the School of the Environment and the Biology Department joined three FAMU postdoctoral associates and two faculty members as authors of the paper. The ISMEJ is highly ranked at a 9.3 “Impact Factor,” one of the highest rankings among microbial ecology journals, and No. 5 among all ecology journals.

Among the FAMU student authors are five graduate and two undergraduate students. Five of these students and one postdoctoral associate are African American. Dr. Henry Neal Williams, the leader of the group and the study stated that this is extraordinary for this
number of underrepresented students to be involved in authoring a paper in such a high quality journal. This accomplishment raises the bar for not only these students, but also others at FAMU and other HBCUs. Student publication is a high priority in Williams’ mentoring and goals for his students. One of the student authors, Huan Chen, has previously published a paper in ISMEJ. Nearly all of the master’s and doctoral students from Williams’ laboratory have authored or co-authored several scientific papers in well-regarded journals. Williams tells his students that having science publications in respected peer-reviewed journals is near to being the great equalizer within the scientific community. This and similar accomplishments by others represent the high potential in STEM training and research at FAMU and other HBCUs.

To fully realize this potential, greater support is needed from all levels, local to federal. The contributing authors from FAMU include Henry Williams, Despoina Lymperopoulou, Rana Athar, Ashvini Chauhan, Tamar Dickerson, Huan Chen, Timkhite-Kulu Berhane, Nadine Bradley, Shanterial Young, Jacqueline Murray, Oladipupo Mustapha, Cory Blackwell, and Yahsuan Tung.
John Cooperwood, Ph.D., Professor, College of Pharmacy and Pharmaceutical Sciences, an inventor with three patents to date, former Research Excellence Award Recipient
FAMU Receives $1.3M NIH Grant to Support Innovative Cancer Treatment Research

FAMU received a $1,351,400 grant from the National Cancer Institute (NCI) and the National Institute of General Medical Sciences (NIGMS) of the National Institutes of Health (NIH) to support groundbreaking research that is poised to uncover a more direct and effective method for treating lung cancer.

The lung cancer research supported by the four-year grant is also expected to provide insight and solutions for more effective treatments for cancers that often impact minority and underserved communities and are more difficult to detect. These include pancreatic, prostate, and triple-negative breast cancers. Nazarius S. Lamango, Ph.D., professor of medicinal chemistry at the FAMU College of Pharmacy and Pharmaceutical Sciences (COPPS) is the principal investigator on the research project, titled “Disrupting Polyisoprenylated Protein Function for Lung Cancer Therapy.”

Joining Dr. Lamango as researchers and co-investigators are Gebre-Egziabher Kiros, Ph.D., associate professor of epidemiology and biostatistics in the FAMU COPPS, and Offiong F. Ikpatt, M.D., Ph.D., assistant professor of pathology at the University of Miami. Lamango explained that in the past four or five years, his team’s research has helped to identify an enzyme that is very important for controlling the way cells survive, divide, and multiply. He and his team discovered that the esterase enzyme is too active in various cancer types. He explained that the grant will help us with the funding needed for personnel, equipment and supplies to take our research a step further towards the application of the knowledge gained about this protein – in regard to companion diagnoses and more effective cancer therapies.

The team also developed some small molecule compounds that can be used to inhibit the enzyme or disrupt the activities it metabolizes. This research is poised to help doctors to be able to tell, using the companion diagnosis, which patients are likely to benefit from these potential new therapies.

Assisting the professors are three, third-year graduate students in FAMU COPPS, who say they are humbled and honored to participate in lung cancer research that may contribute to not only saving the lives of those diagnosed with lung cancer, but also those affected by other complex cancers.

Student researcher Rosemary Poku, a native of Ghana and pharmacology/toxicology major, hopes to eventually make an impact on prostate cancer through her participation in the cancer research project.

Olufisayo Salako, a pharmaceutics major from Alabama, hopes that her research will help lead to more effective cures for triple negative breast cancer. For student researcher Augustine Nkembo, a native of Cameroon and a pharmaceutics major, participating in the research project is a dream come true. After hearing a cancer survivor’s testimony, Nkembo said he was determined to somehow ensure that he played a role in helping others to become cancer survivors instead of cancer victims. Nkembo’s research focus is pancreatic cancer.

Nazarius S. Lamango, Ph.D., Professor of Medicinal Chemistry, College of Pharmacy and Pharmaceutical Sciences, former Research Excellence Award Recipient
The Department of Energy/National Nuclear Security Agency (DoE/NNSA) awarded a grant totaling approximately $4.5 million for three years to the FAMU Consortium on Materials and Energy Studies (CMaES). **Charles A. Weatherford, Ph.D., is the principal investigator (PI), along with co-PIs from the physics faculty: Bidhan Saha, Carol Scarlett, Ph.D., and James Strohaber, Ph.D.**

Weatherford is the associate vice president for Research, director of the FAMU Center for Plasma Science and Technology (CePaST), and Professor of Physics. FAMU is the lead university on the consortium, which includes seven other HBCUs and two Department of Energy laboratories—Lawrence Livermore National Laboratory (LLNL) and Los Alamos National Laboratory (LANL).

The CMaES has aligned its research efforts to support the National Nuclear Security Agency (NNSA) goals relevant to the DoE national laboratory energy and materials missions. In particular, the consortium’s primary purpose is to support the NNSA goal to increase minority hires at the DOE national laboratories. The consortium model consists of several components in order to ensure success, inclusivity, and sustainability, which includes, but are not limited to, inter-HBCU research collaborations, national laboratory-HBCU interactions, structured mentoring, joint curriculum building, short- and long-term research internships, and various pre-college STEM initiatives.

CMaES is approaching this undertaking by assembling a research team consisting of faculty and students from STEM-related disciplines and staff scientists from DoE laboratories with extensive industrial and academic research experience in materials fabrication and characterization. The consortium utilizes a multi-disciplinary approach to perform complex complementary studies in order to attain common energy- and materials-related research objectives. CMaES has coupled extensive computational and analytical capabilities from each facility along with expert scientists and advanced students in order to investigate, characterize, and improve novel energy and materials science and engineering.

For example, the modeling effort involves performing ab initio quantum chemistry calculations for an active catalyst surface to determine binding energies, thermodynamics and activation energies for fundamental steps in the reaction mechanism. In doing so, physicists can better understand the structural features that are responsible for activity and predict optimal changes necessary to enhance materials. These findings will facilitate the search for novel materials by identifying their desired properties. Various experimental and analytical techniques will be employed in order to validate modeling predictions and substantiate findings. Further, alternative confinement schemes for nuclear fusion are being studied as well as the dynamics of high-temperature plasmas and their interactions with antimatter and laser fields.

CMaES operates a Spheromak Fusion reactor at CePaST, which uses a novel plasma confinement scheme. CMaES is also studying an original fusion mechanism titled, “Field-Assisted Muon-Catalyzed Fusion.” The coupling of fields to matter and the experimental and computational understanding of such coupling is a primary topic of study. In all of these efforts, the students are intimately involved so as to integrate education and research ensuring that the students will be well-prepared for their research experiences and professional positions at LANL and LLNL.
FAMU Makes History with Two Black Female Doctoral Graduates in Physics

Florida Agricultural and Mechanical University continues to be the top producer of doctoral degrees awarded to African Americans in science, technology, engineering, and mathematics-related programs (STEM), according to the FAMU Annual Accountability Report.

Staci R. Brown from Chicago, Illinois and Patrice Jackson-Edwards from Jacksonville, Florida both received their doctoral degrees in physics during the FAMU 2015 Spring Commencement exercise. Doctoral degrees in physics received by Black women are a rare and uncommon occurrence. According to data provided by the Integrated Postsecondary Education Data System (IPEDS), there were approximately 1,600 doctoral degrees awarded in physics in 2013-2014; only two were received by Blacks, both of which were earned at FAMU. Both women received undergraduate degrees in physics from FAMU and presented research on various topics such as detection sensitivity and the use of K-shell X-ray Fluorescence (KXRF).

Brown was inspired by her strong, inspirational female science teachers during her early matriculation in elementary, middle, and high school. She earned a bachelor’s degree in physics from FAMU in 2006 and a master’s degree in physics from Rutgers University in New Jersey in 2009. She did not want to be limited in her career by not having the appropriate credentials, which eventually led her to pursue her doctoral degree in physics.

Under the direction of Physics Professor Lewis Johnson, Ph.D., Brown completed her doctoral research, which involved the use of Laser-Induced Breakdown Spectroscopy (LIBS) for the elemental analysis of organic and isotope-enriched materials to improve detection sensitivity.

She has published several scientific papers, presented research at over a dozen national and international technical conferences, and has won numerous awards for her research. Currently, Brown is assigned to the National Nuclear Security Administration (NNSA) Office of Defense Programs Research and Development as an NNSA Fellow, and will assume a full-time position as a staff scientist with NNSA.

Brown’s career and research goals are to use lasers for the standoff detection of explosive devices and isotope enriched materials. Additionally, she aspires to work her way up to a high-level management position in government or industry so that she can be at the forefront of the decisions being made to provide support and funding to national science initiatives.

Jackson-Edwards’ first interest in science was sparked during her years in middle school when one of her teachers made his students conduct small experiments. While she did not start out wanting a doctoral degree before she learned about the different levels and benefits of obtaining her doctorate. Her love and passion for science pushed her to continue school.

Jackson-Edwards had the opportunity to conduct interdisciplinary research projects with the Department of Physics and the School of the Environment and has presented research at various technical conferences. She completed her doctoral research that involved the use of K-shell X-ray Fluorescence (KXRF) to conduct lead burden studies under the direction of Physics Professor Elliott A. Treadwell, Ph.D. (deceased June 20, 2015).

While publishing several papers, Jackson-Edwards is currently pursuing tenure-track academic positions at colleges in Florida and Georgia where she plans to teach physics and continue to pursue her research.
For Florida A&M University-Florida State University College of Engineering researcher Okenwa Okoli, testing his latest research is vital. Okoli, an associate professor of industrial and manufacturing engineering, and his research team at FSU’s High-Performance Materials Institute has been working on bulletproof body armor for U.S. military men and women.

Okoli has been working with nanotubes, a carbon-based material that is much smaller than a human hair, but stronger than any material known to man. Nanotubes are derived from buckminsterfullerene, a unique carbon molecule that is both extraordinarily strong and light. FSU chemistry Professor Harold Kroto shared the Nobel Prize for Chemistry in 1996 with two colleagues, Richard E. Smalley and Robert F. Curl Jr., who jointly discovered buckminsterfullerene, which is better known by its nickname, “buckyballs.”

Okoli and a former colleague, Jim Thagard, developed a composite manufacturing process to create lightweight body armor using nanotubes that protect a soldier’s legs, arms, and head. Metal traditionally has been used for such protective gear, but lightweight composite materials such as the ones produced by Okoli now can be used in place of heavier metals, he said.

Okoli currently is working with the U.S. Air Force to build bulletproof body armor for the force’s parajumpers. Okoli said there are many universities nationwide looking at lighter solutions to bulky body armor so that soldiers can better do their job in the field. However, the FAMU-FSU College of Engineering leads the effort due to its work with nanotubes.
Technological innovation is indeed important to economic growth and the enhancement of human possibilities.

—Leon Kass
Faculty Member Invited to Serve on American Kinesiology Board

Sarah Price, Ph.D., associate professor and chair of health, physical education, and recreation, has been invited to serve on the American Kinesiology Association’s Board of Directors. According to Amelia Lee, Ph.D., executive director of the Association, the list of nominees was especially strong this year, as the slate was developed with the intent of balancing leadership in the field, inclusion/representation of institutional size, structure, location, sub-discipline, and Carnegie Classification. If elected, Dr. Price will serve three years beginning after the 2016 Leadership Workshop to be held in San Antonio, Texas, this spring.

According to Price, this invitation is significant because it gives Florida A&M University a leadership and oversight position for Kinesiology programs nationally. Underrepresented minorities disproportionately suffer due to a lack of representation in this emerging scientific and instructional field, noted Timothy E. Moore, Ph.D., Vice President for Research.

Dr. Price received her doctorate in motor behavior at the University of Florida, her master’s degree in Adapted Physical Education from the Ohio State University, and dual bachelor degrees in health education and physical education from Johnson C. Smith University.

FAMU-FSU Engineering Professor Uses Lab to Create Research Opportunities

C.L. Golda, Ph.D., postdoctoral scientist in the lab of Subramanian “Dr. Rama” Ramakrishnan, Ph.D., at the FAMU-FSU College of Engineering, conducts research on synthesis of polymer-grafted nano-particles for defense and aerospace applications (supported by DOD and NASA). In Dr. Rama’s lab, Golda works with graduate student FaheemMuhammed (NASA fellow) on the grafting of polystyrene to iron oxide nano-particles.

Graduate student Divya Bahadur works with graduate student Herbert Washington on how to set up the rheometer software to start measuring the flow properties of complex fluids. Divya and Herbert are working on an NSF-funded project to measure the structure, dynamics, and rheology of colloidal gels in collaboration with scientists at Argonne National Laboratory. Dr. Rama serves as the principal investigator for this project.
Nursing Professor Addresses Patient-Centered Care In Publication

Jaibun K. Earp, Ph.D., ARNP, professor and associate dean of the FAMU School of Nursing, published an article in The Journal for Nurse Practitioners. The article is titled, “Patient-Centered Care Incomplete without Inclusion Of Complementary and Alternative Medicine.”

As health care and health care systems become more complex in the United States, the words we hear constantly include cost-effectiveness, patient outcomes, safety, quality, and collaborative care, just to name a few. In the article, Earp discusses Forbes’ “Americans’ Disconnect Over Health Costs. She explores the statement that the average cost of employer-sponsored health insurance is up dramatically from about $9,000 in 2003 to $16,000 in 2013 and that the high cost of health care is taking a toll on many households.

Professors Examine College Student Retention in Research, Theory, and Practice

In the study, “Factors That Influence African American Male Retention and Graduation, The Case of Gateway University, a Historically Black College and University,” FAMU professors Errick Farmer, Ph.D., School of Business and Industry, and Warren Hope, Ph.D., College of Education, explore how African-American males face major challenges in retention and graduation from institutions of higher education. The six-year graduation rate for African-American males at four-year public institutions and private nonprofit colleges is less than 40 percent. This figure suggests that persistence toward degree attainment is a problem.

The purpose of this study was to ascertain whether selected precollege- and college-level variables have a relationship to retention and graduation for African-American males. Gateway University, a historically Black college, and university, was the site of the investigation. Three research questions were posed: (a) What precollege variables best predict retention and graduation for African-American males? (b) What college-level variables best predict retention and graduation for African-American males? And (c) What combination of precollege- and college-level variables best predict retention and graduation for African-American males? Five hundred and sixty-two African-American males, entering freshmen for the 2005–2006 academic year, comprised the sample. The results reveal that (a) students with higher high-school grade point averages (GPAs) were more likely to be retained and graduate than those with lower GPAs, (b) students with higher first semester GPAs were more likely to be retained and to graduate than those with lower first semester GPAs, (c) residents of the state were most likely to be retained than nonresidents, and (d) residents of the state and students with higher first semester GPAs were more likely to be retained and graduate than those with lower first semester GPAs.

The study’s findings are published in the “Journal of College Student Retention: Research, Theory & Practice” (V17, N1, P 2-17, 2015).
**FAMU Successfully Mixes Art, Architecture, and Research**

Roberto Rovira, a landscape architect with a design, engineering, and fine arts background, was invited to Florida A&M University as a guest lecturer and installation artist for a multi-disciplinary, three-day event, which included participation from Architecture, Environmental Science, and Art students, as well as faculty.

Other collaborators included the FAMU Division of Research, FAMU’s Sustainability Office, and the City of Tallahassee. The lecture “Temporary Ecologies” took place at the School of Architecture and Engineering Technology, and included the installation titled, “Site DisPlacement,” which was on display for several months at the School atrium and the Conoly Greenhouse grounds. The installation is summarized as taken from “inexpensive, recyclable, and biodegradable qualities of cardboard that contribute to its vast global footprint and make it a familiar fixture that transcends place and culture.”

**FAMU Professor Has a Stellar Year in Stem Research and Training**

FAMU Professor Anita Nag, Ph.D., assistant professor in the Department of Chemistry at the College of Science and Technology, had an incredible year.

Dr. Nag received the Faculty Research Award for $10,000 and participated in a grant that provided $20,000 in funding for FAMU’s Research Center in Minority Institute (RCMI) Faculty Development Fund. She also received the American Society of Virology Teacher Travel Award. Also, her students Tony Hansberry and Uche Ononuju presented their work at Annual Biomedical Research Conference for Minority Students, and they received travel awards from the organization. Hansberry appeared on CNN with Dr. Sanjay Gupta.
ACKNOWLEDGEMENTS

Timothy E. Moore, Ph.D., Publisher
O. S. Lamar Sheffield, Editor
FAMU Office of Communications and External Relations
All other collaborators and contributors
All granting organizations

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