Pictured left to right: Drs. Timothy E. Moore, Vice President for Research; Anthony Ananga (College of Agriculture and Food Sciences), 2015 Emerging Researcher Award Recipient; Elmira Mangum, President; and Carl Goodman (College of Pharmacy and Pharmaceutical Sciences), 2015 Research Excellence Award Recipient at the Florida Agricultural and Mechanical University (FAMU) Sixth Annual Principal Investigators’ Appreciation and 2015 Researchers of the Year Awards Luncheon. The event was held in the Foster-Tanner Band Rehearsal Hall (FAMU Campus) on Friday, April 17, 2015, themed: **In Recognition of Research Excellence With Caring.**
This medium, RESEARCH REVELATIONS™ is designed to help highlight the robust research community of Florida A&M University (FAMU). From STEM (Science, Technology, Engineering and Math) disciplines → STREAM, [integrating/emphasizing Research, Agriculture, along with (artistic concepts and designs) factored into the STEM equation, thus yielding STREAM], the research spotlight shines on you! Achieving collaborative research outcomes in the spirit of collegiality is a strategic part of the vanguard that the FAMU Division of Research (DoR) envisions for the research enterprise to continually flourish. Your thoughtful input is essential at os.lamar@famu.edu.

RESEARCH SNAPSHOT

Mandip Sachdeva, Ph.D. receives four patents in one year!

Professor, Section Leader, Inventor…

The process of securing a patent is an arduous one, in even the most idyllic circumstances; to receive four in one year after much labor-intensive research in the lab is phenomenally noteworthy. Such is the case for Mandip Sachdeva, Ph.D., Professor, College of Pharmacy and Pharmaceutical Sciences, Pharmaceutics Section Leader, Editor-in-Chief, Critical Reviews in Therapeutic Drug Carrier Systems. Presently he serves as the Research Core Director for the P20 Center of Excellence Cancer Research Training and Community Services’ activity at FAMU. This center is supported, in part, by a grant from the National Institutes of Health, National Institute on Minority Health Disparities, Grant 1P20MD006738-01. Dr. Sachdeva’s collaborative research projects and outstanding outcomes have yielded four patents since February 2014 to date:

1. Patent #8,647,661 - Surface Modified Multilayered Nanostructures for Dermal Delivery (co-inventor Punit Shah, Ph.D.): This invention allows localized delivery as well as improves drug retention into the deeper skin layers therefore it is well suited to treat various skin disorders and diseases like fungal, bacterial, and viral infections; inflammation associated with rheumatoid arthritis, Crohn’s disease, multiple sclerosis, eczema and psoriasis and acne; skin cancer including melanoma; dry skin and for cosmetic purposes. The multilayered nanostructures can be used to deliver small molecules, proteins, or peptides, alone or in combination which enables the development of combination therapies for skin disorders and diseases. And, because this invention offers the ability for localized drug delivery into the deeper skin layers, the potential also exists for reduced side effects, better patient compliance, and improved patient satisfaction.

2. Patent #8,715,736 - Nanoparticle Formulations for Skin Delivery (co-inventor Ram Patlolla, Ph.D.): For diseases like psoriasis and allergic contact dermatitis, overcoming the skin barrier is the most crucial step. Stratum corneum is the biggest barrier and has to be crossed for things to get into the skin. Although nanoparticles have been used to cross the skin barrier, their permeation into the skin deeper layers is controversial. This invention deals with the coating of nanoparticles with cell penetrating peptides (CPP) that can enable in the crossing of the skin barrier.
Mandip Sachdeva, Ph.D. receives four patents in one year!

Professor, Section Leader, Inventor… (continued)

We have discovered that coating the surface of the lipid nanoparticles with CPP potentiates the skin permeation of variety of drugs by 3-4 fold in comparison to nanoparticles that have no modification with CPP. The role of CPP coated nanoparticles has been shown in animal models and shows that inflammation due to contact dermatitis and psoriasis can be treated with these nanoparticles. Further evidence was also shown that these nanoparticles can reach the deeper layers of epidermis which is not possible with uncoated nanoparticles. This invention has applications for all kinds of skin conditions and can be used to deliver all kind of therapeutic agents.

3. Patent #8,846,616 - Alpha-Melanocyte Stimulating Hormone (α-MSH) as Topical Anti-Inflammatory Agent for the Treatment of Allergic contact Dermatitis and Eczema (co-inventors Cheryl Armstrong, Ph.D. and John Ansel, Ph.D.): α-MSH is a 13-amino-acid peptide hormone and can be detected in numerous cell types such as melanocytes, keratinocytes, epithelial cells, B cells, natural killer cells, and subsets of T cells. Although originally discovered in the pituitary gland and named for its effects on pigmentation, more recent studies revealed that α-MSH interacts with immune cells, thereby exerting antimicrobial, anti-inflammatory, and immunomodulatory activities. It has been found to have a role in application is psoriasis and skin dermatitis. However this peptide cannot permeate skin. This invention deals with a method for the treatment of inflammatory skin disorders like allergic contact dermatitis and eczema by topically applying a composition comprising alpha melanocyte stimulating hormone (αMSH) or an αMSH analog in a therapeutically relevant amount. There is substantial absorption of αMSH especially when delivered in a formulation containing transcutol and 1-methyl-pyrrolidone (NMP). The invention deals with making a formulation which can deliver alpha MSH and can treat skin conditions like allergic contact dermatitis and other inflammatory disorders.

4. Patent #8,865,206 - Surface Modified Multilayered Nanostructures for Dermal Delivery (co-inventor Punit Shah, Ph.D.): Dermal delivery is best suited for various skin diseases or disorders. However, the stratum corneum limits the permeation of number of suitable pharmaceutical agents for dermal delivery. Certain embodiments of the present invention include surface modified multilayered nanostructures. The modification was completed by using fatty acids enabling delivery of a significant amount of one or more pharmaceutical agent(s) into deeper layers of the epidermis and dermis to treat skin diseases or disorders. It is not clear if nanoparticles themselves can enter into the deeper layers of skin except from hair follicles. In this invention, the inventors have surface modified the nanoparticles with oleic acid which has been known to be a skin penetrating agent and hence can enter the skin layers through the paracellular and transcellular pathways. The novelty of the approach is the use of a PEF-Oleic acid coating on nanoparticle surface which alters its permeation characteristics. Further the nanoparticles can be made of a lipid and also a polymer and hence we can deliver more than one drug into the skin based on the lipophilicity or hydrophilicity of the drug. This flexibility allows the use of drugs with different mechanisms especially in the treatment of psoriasis, skin inflammation, irritant and contact dermatitis and other such skin disorders. Results in animal models of psoriasis have shown significant benefits.

Along with the above-referenced patents and discoveries, Dr. Sachdeva, has secured more than $25 million in grant funding from agencies such as the National Institutes of Health, National Aeronautics and Space Administration, the U.S. Department of Defense and various pharmaceutical companies. He is hopeful that his research will lead to novel and targeted treatment methods for lung cancer and skin inflammatory disorders. He has made significant contributions to the knowledge and understanding in the area of drug delivery with special emphasis in inhalation/aerosol delivery as applied to lung cancer and topical delivery of neuropeptides. He has used a multidisciplinary approach of not only delivering novel anticancer agents by inhalation drug delivery, but also looked into their mechanism of action to look for newer targets.
Mandip Sachdeva, Ph.D. receives four patents in one year!
Professor, Section Leader, Inventor… (concluded)

Dr. Sachdeva has identified new molecular pathways and mechanisms for therapeutic agents and nucleic acids intended for the treatment of lung, breast and skin cancer. His work has resulted in over 110 peer reviewed publications and more than 200 presentations in national and international meetings. He is also a fellow of American Association of Pharmaceutical Scientists (AAPS).

Pictured: Researchers in Dr. Sachdeva’s pharmaceutics lab
Sachdeva received his Bachelor of Science degree in pharmacy from Panjab University, India in 1980. He earned his master’s and Ph.D. degrees in bio-pharmaceutics from Dalhousie University, Halifax, Nova Scotia, Canada in 1986 and 1989 respectively. He then worked for a pharmaceutical company, SynPhar Laboratories in Edmonton, in Alberta, Canada for four years as a group leader for drug targeting. He joined FAMU as an assistant professor in 1993 and was promoted to associate professor in 1996 and professor in 2002. During his tenure at FAMU, Sachdeva was instrumental in developing the graduate program in pharmaceutics. He may be contacted at Mandip.sachdeva@famu.edu.

FAMU and PRISM

FAMU is a member of the PRISM (Photonics Research Institute for Sustainable Manufacturing) team—a collaborative effort led by the University of Central Florida (UCF) in Orlando, along with the photonics industry, in pursuit of an integrated photonics manufacturing innovation institute consortium. FAMU is one of three finalists responding to the Department of Defense-United States Air Force (DoD-USAF) competition to create a $110 million Integrated Photonics Manufacturing Institute with an industry consortia making at least an equal investment. UCF is leading the proposed consortium with other partners consisting of FAMU, Georgia Institute of Technology, the University of Alabama-Huntsville, Clemson University, the University of Illinois, Osceola County, the Florida High Tech Corridor, and Enterprise Florida. The total funding level, including matching funds, is over $500 million. Dr. Timothy Moore, FAMU Vice President for Research; Dr. Lewis Johnson, FAMU Assistant Dean of the College of Science and Technology; and Dr. Charles Weatherford, Associate Vice President for Research, Professor of Physics, and Director of the FAMU Center for Plasma Science and Technology (CePaST), participated in the DoD-USAF site visit at the UCF Center for Research and Education in Optics and Lasers (CREOL), College of Optics and Photonics on Monday April 27, 2015. The FAMU participation in PRISM will be focused on, but not limited to, CePaST.
**Title III is quite significant in helping produce terminal degree graduates at FAMU**

Why does the U.S. Department of Education support Title III programs, some may ask? FAMU’s Executive Director for Title III, Dr. Wanda Ford, notes on their website: [http://www.famu.edu/index.cfm?titleIII&TitleIIIHome](http://www.famu.edu/index.cfm?titleIII&TitleIIIHome): “The mission of Title III Programs is to ensure that federal resources are effectively and efficiently used to assist the University in becoming self-sufficient and expanding its capacity to serve low-income students. The funds are provided to improve and strengthen the University’s academic quality, institutional management, fiscal stability, and student service outcomes, including graduate students’ enhancement activities.” Title III is not a research grant, however, it does provide important financial assistance to students who may be conducting research.

Associate Vice President for Research, Dr. Charles A. Weatherford, who also serves as Professor of Physics, and Director of the Center for Plasma Science and Technology noted: “Title III has provided the majority of the FAMU Physics Department's graduate student support for its Ph.D. program, which started in 2001 and has produced (as of May 2, 2015) 20 Ph.D. degree recipients. Without Title III, the number of Ph.D.’s produced would be significantly smaller. Two of these physics Ph.D.s who will graduate on May 2, 2015, Ms. Patrice Edwards and Ms. Staci Brown, are African-American females. In 2010, FAMU produced the only two African-American female Physics Ph.D.’s in the U.S. Thus, it appears probable that these two Ph.D.’s will comprise 100% of the U.S. cohort of African-American female Physics Ph.D.’s in 2015. In 2007, FAMU produced four African-American Physics Ph.D.’s which comprised approximately 25% of the U.S. cohort of African American Physics Ph.D.’s for that year. Thus, Title III is having a very large percentage impact on the U.S. production of African American Physics Ph.D.’s.”

“If we knew what it was we were doing, it would not be called research, would it?”
- Albert Einstein
White House Initiative on Historically Black Colleges and Universities  
U.S. Department of Education

This year, Congress has appropriated $60 million to the Department of Education (Ed) for the First in the World (FITW) grant competition, with a $16 million set-aside for Minority-Serving Institutions (MSIs). Although priorities for the FY2015 competition have not yet been announced, Ed is providing general information about FITW to help institutions begin preparing—FAMU's DoR's Office of Sponsored Programs (OSP) is engaged in the preliminary process, with participation in the recent conference call held Monday, April 27, 2015:

Objectives:

- Increase the number of underrepresented and socioeconomic disadvantage students receiving post-secondary education
- Increase the number of underrepresented and socioeconomic disadvantage students receiving a minimum of a BS degree

Discussions:

- Development and preparation of strong applications from HBCUs and other institutions
- Proven test strategies to prepare underprepared and under-representative populations access to post-secondary education
- Programs that are evidenced-based with new and innovative ideas to reduce the length of time for degree obtainment
- Programs that are evidenced-based with new and innovative ideas to reduce the debt for degree obtainment
- Research driven applications that are competitive, that provide new knowledge and understanding to barriers that prevent graduation and reduced large student debt
- Application shouldn't focus on one specific population
- Applications must have cutting-edge approaches (control groups are required)
  - Existing program expansion with proven results
  - New to the Institutions
  - Based on Best Practices - High-tiered evidenced-based
  - New initiative – validation must be proven
  - Must be able to demonstrate replica program not specific to one institution – must show similar success can be achieved at other SUS's
- $60 million budget for FITW grant, with $16 million set-aside for MSI's
- Open Eligibility Approval Letters were sent to Title III and Title V Institutions
- Additional notices will be released May 11-14, 2015
- Recommend potential applicants visit FITW website to review previously funded abstracts

For further information on the FITW grant, please visit: [http://www2.ed.gov/programs/fitw/eligibility.html](http://www2.ed.gov/programs/fitw/eligibility.html) or call the FAMU Division of Research, Office of Sponsored Programs at 850.599.3531.
Remembering C.U. Smith

From his uncanny way of ruffling one’s feathers, rattling one’s cage, turning the pot over, getting an intense discussion started, Charles U. Smith, Ph.D., bore somewhat a dubious distinction of speaking his mind, and engaging others (daringly) to do likewise. Smith died on April 20, 2015 at the age of 91. He was a former professor and chair of the Department of Sociology and Director (First Dean) of the former School of Graduate Studies, Continuing Education and Research.

Memorialized recently (April 29, 2015) in historic Lee Hall Auditorium was befitting for this “giant of a man” who once stood 6’5” and strolled across the grassy knolls of his beloved FAMU—the place where his only daughter, Shauna Y. Smith, was born (in the former FAMU Hospital, now Foote-Hilyer Administration Center)!

Remembered as “speaking truth to power” and providing a “test of endurance to strengthen the spine” during memorial tributes, some research firsts for Dr. Smith over the course of his almost 50 years at FAMU included: initiating the Graduate Feeder Program, implementing the Research Bulletin for faculty publication in a refereed journal; facilitating seed money for faculty to conduct research, and instituting The Negro Educational Review (an interdisciplinary forum for discussion related to the African Diaspora).

Smith was also celebrated for being an impassioned voice for civil rights, equity for all, a voice for the voiceless, for treating everyone fairly, without exception or excuse. He was active in the Tallahassee Bus Boycott of 1956 and numerous other local civil rights initiatives. Dr. Charles U. Smith Scholarship Fund at SunTrust Bank is accepting donations in order to continue its namesake’s passion for helping college students.

“All the world is a laboratory to the inquiring mind.” -Martin H. Fischer
The Uniform Guidance: Key Issues for Universities

As presented by the National Council of University Research Administrators (NCURA) is the single biggest regulatory change in the last 50 years of research administration with a lot to digest – please be patient! FAMU’s point of contact is the Office of Sponsored Programs, 850.599.3531. Check in regularly with: https://cfo.gov/cofar/.

Key Websites:
Uniform Guidance, Title II CFR Part 200 www.ecfr.gov
Federal Register Notice with Preamble https://federalregister.gov/a/2013-30465
Questions and Concerns about the UG cofar@omb.eop.gov

Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards

The U.S. Department of Homestead Security—Federal Emergency Management Agency (FEMA)—held an intergovernmental webinar series: “The Super Circular” 2 C.F.R. Part 200 on December 18, 2014. The Super Circular became effective on December 26, 2014 and is more than just a consolidation of financial assistance circulars; it contains substantive changes - review it carefully!

Super Circular Resources
- Crosswalk of Changes: http://www.whitehouse.gov/omb/grants_docs
- FEMA information: http://www.fema.gov/grants

Contact Information:
Federal Emergency Management Agency
Office of Intergovernmental Affairs
(202) 646-3444
FEMA-IGA@fema.dhs.gov