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INQUIRY

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

INSIDE THIS ISSUE:

RESEARCH AND
DEVELOPMENT
AWARDS 2

ANSWERING THE
CALL 2

ANNOUNCEMENTS 3

GRANT AWARDS 4

OVPR MISSION:

THE OFFICE OF THE VICE PRESIDENT FOR RESEARCH EXISTS TO SUPPORT THE EXTERNAL FUNDING INITIATIVES OF WMU FACULTY, STUDENTS, AND STAFF; TO ASSURE COMPLIANCE WITH ALL APPROPRIATE FEDERAL AND STATE REGULATIONS; AND TO ADVANCE THE OVERALL RESEARCH AGENDA OF THE UNIVERSITY.

WWW.WMICH.EDU/
RESEARCH

NSF GRANT FOR A PROMISING CAREER

Dr. Sherine Obare of WMU's Chemistry Department is a recent recipient of the National Science Foundation's CAREER grant. Considered to be one of the NSF's most prestigious awards, the CAREER grant "supports teacher-scholars early in their careers who have shown effective incorporation of research and education within the context of the mission of their organization" (NSF). With the CAREER grant Obare aims to not only conduct extensive cutting-edge research but also provide an educational agenda to inspire and involve students in nanoscale materials research. Obare, an assistant professor

of chemistry at WMU, secured over \$500K from the NSF CAREER grant with her proposal entitled "CAREER: Rationally



Dr. Sherine Obare at her lab in Haenicke

Assembled Nanoparticles for Multi-Electron Transfer Processes."

Since her arrival in August 2004, Obare has received the Arts and Sciences Teaching and Research Award, the Faculty Research and Creative Activities Award and, recently, the Research Development Award (RDA), a program sponsored by the Office of the Vice President for Research. The RDA program is designed to assist faculty with advancing their research through a series of developmental activities. Upon winning the award in 2005, Obare attended OVPR workshops specializing in securing external funding for future research.

(Continued on page 3)

TECHNOLOGY COMMERCIALIZATION

As a public university, Western Michigan University prides itself on providing solid undergraduate and graduate-level programs while being able to provide researchers the opportunity to develop ideas into potentially new products. Dr. Karim Essani of the Department of Biological Sciences specializes

in the study of molecular and immunological aspects of viral infections. Dr. Essani has been a member of WMU for the last 15 years and has contributed 25 original publications to the scientific community.

Essani is one of a handful of WMU researchers who has had the opportunity to conduct origi-

nal work and witness his projects develop into a commercialized product. Using the Tanopoxvirus as a model for his research, Essani looks at the molecular mechanisms within the viral model that dictate which gene sequences are expressed or kept silent.

(Continued on page 3)

RESEARCH DEVELOPMENT AWARD RECIPIENTS 2006

Every year the OVPR awards some of the newest faculty members with the Research and Development Award. Created to encourage early-career and pre-tenure faculty members to engage in and advance their research, the recipients listed below were chosen from a list of over 75 applicants. Congratulations to the 2006 RDA recipients.

Fyneweever, Herb, chemistry, for Chemistry Education.

McDonnel, Kelly, counselor education, for Group Counseling.

Flamme, Greg, speech pathology and audiology, for Hearing Impairment.

Barton, Barbara, school of social work, for Domestic Violence.

Koshmanova, Tetyana, teaching, learning and leadership, for Global Education

Jrade, Ahmad, civil and construction engineering, for High-Performance Green Buildings.

Rhodes, Sybil, political science, for Biotech Agriculture in Los Angles.

Al-Faqaha, Ala, computer science, for Performance Study of Optical Band Switching.

Curtis, Amy, interdisciplinary health services, for Electronic Data and Health Care.

Mukherjee, Debasri, economics, for the Nursing Labor Market.

Ransom-Hodgkins, Wendy, biological sciences, for Cancer Growth Factors.

Ro, Kapseong, mechanical and aeronautical engineering, for Aeronautical Refueling.

Leingpibul, Thaweephan (Duke), marketing, for the Global Supply Chain.

Ikonovov, Pavel, industrial and manufacturing engineering, for Nanorobots in Medicine.

ANSWERING THE CALL

From July 2005 through May 2006, WMU faculty and staff have garnered approximately \$37M in external funding, a 20% increase from last year. As an institution WMU has made enormous strides to provide new technology and research facilities, and promote basic and applied research. The University community should feel very proud of these advancements. But external funding does not tell

the whole story. Research both funded and unfunded by faculty, students, and staff contributes to the national and international reputation of the University and should be a showcase to attract both graduate and undergraduate students.

The Carnegie Foundation recently classified WMU as a research university of high research activity, confirming our national ranking.

The coming decades should prove fruitful for faculty and students alike, with state of the art technologies and improved research facilities supported by an increase in external funding. The Office of the Vice President for Research stands ready to support the research efforts of WMU faculty and students obtaining external funding.



ANNOUNCEMENTS

- The Faculty Research Travel Fund has been increased to a maximum of \$700 effective after July 1, 2006. Reimbursements will cover:
 - Transportation costs, economy class air fare, and related ground transportation
 - Meals for three days
 - Lodging for two nights
 - Conference and exhibition registration fees
- The OVPR recently updated and redesigned its website. Be sure to browse funding opportunities. You can connect with the redesigned OVPR website at <http://www.wmich.edu/research>.



Haenicke Hall, Science Research Laboratory Facility

TECHNOLOGY COMMERCIALIZATION (CONTINUED)

(Continued from page 1)

Similar to the human genome, viruses are used by Essani and many top research universities because of similarities and the ability to manipulate the genome. Applying all of the data and knowledge gained from his research, Essani has focused on how different viruses can harm or benefit the human immune system.

Viruses have evolved with time and have developed defense systems that can counteract the reactions of the host cell. When the Tanopoxvirus enters a cell it is able to reprogram the cell and dictate new processes to be performed. In the case of the Tanopoxvirus, once it has entered the cell and reprogrammed the genome, a new protein is produced which is then secreted into the blood stream.

It may be this protein that could eliminate the need for

having open heart surgery; an injection of the viral protein into clogged arteries to free obstructions may one day become commonplace. Essentially acting as Drano for the body's arteries. Dr. Grant McFadden of Viron Therapeutics who has been working

with one of these molecules are currently underway, and the results so far are very encouraging."

If such a revolutionary treatment reaches the market, it will require collaboration of researchers, WMU, and a corporation that sees



Dr. Karim Essani

with Essani on this project says, "The idea of exploiting viral anti-immune proteins as drugs to treat diseases of excessive inflammation or hyperactive immune syndromes is still relatively new. However, clinical

potential in making a new product to satisfy a market need. After publishing an article in *Microbial Pathogenesis* in 1994, Essani was contacted by McFadden who then introduced him to Viron Therapeutics. WMU and Es-

sani then collaborated with Viron to file a patent on the viral gene sequence and novel protein, entitled "Nucleic Acid Molecules and Polypeptides for Immune Modulation" (US patent # 6,894,155). From there Viron and WMU entered an agreement whereby Viron obtained commercial use rights for the patented technology and WMU obtained the right to receive future royalties from Viron. Essani and WMU will continue to investigate the more fundamental aspects of the technology, while Viron will focus on developing a market ready product which includes managing clinical trials for FDA approval. This process will continue to evolve with the development of the commercialized product until somewhere in the future doctors will hopefully write prescriptions for a new, useful medical treatment based on Dr. Essani's work.

GRANT AWARDS

The following are some of the recent faculty and staff who have received grants. With these grants and others WMU has accumulated nearly \$37 million dollars for research activities to date.

Quemada, Hector. Biological Sciences. "Building Functional Biosafety Systems: From Policy Analysis to Development and Implementation," \$1,901,636, International Food Policy Research Institute.

Liou, William W. Mechanical and Aeronautical Engineering. "New Rough Wall Layer Modeling Using the Brinkman's Equation," \$42,000, Office of Naval Research.

Kehew, Alan. Geosciences. "Geologic Mapping of the Dowling and Maple Grove 7.5 Minute Quadrangles," \$10,993, U.S. Geological Survey.

Hartmann, David J. Sociology. "Survey of Gambling Behaviors in Michigan 2005," \$20,000, Michigan Department of Community Health.

Sharp, Helen M. Speech Pathology and Audiology. "Genetics Education in Dentistry," \$3,412, University of Michigan.

Hanssen, Carl E. The Evaluation Center. "External Evaluation of Milwaukee's Mathematics Partnership Program," \$94,396, University of Wisconsin-Milwaukee.

Brown, Robert J. Public Safety. "Bulletproof Vest Partnership Grant Program," \$1,050, State of Michigan.

Jenness, Mark. Mallinson Institute for Science Studies. "Evaluation Technical Assistance for the JCISD 5-12th Grade Math Project," \$15,000, Spring Arbor University.

NSF CRANT FOR A PROMISING CAREER (CONTINUED)

(Continued from page 1)

"The workshops were the most valuable part of the RDA process for me. I learned a great deal from the speakers who were brought in, especially David Bauer," said Obare, adding that the RDA program really helped to motivate and prepare her for developing the proposal to the NSF.

Obare's CAREER research begins in June 2006, and will focus on the development and assembly of nanoparticles with the aim of using these systems to store solar energy. The research will investigate how the stored energy can be used for specialized processes, for exam-

ple, to remove pollutants from ground water sources and also to develop a more efficient process of splitting water molecules to produce hydrogen, and alternative fuel sources. The nanoparticles being developed by Obare and her team of graduate and undergraduate students are designed in such a way that their characteristics and operation can be manipulated by the researchers to attain the desired results. Obare stresses that the size, shape, composition and organization of the nanoparticles are crucial toward developing efficient systems that will achieve the proposed goals.

The educational portion of the grant is just as important as the research. Along with two graduate students, she will be working with local middle school students and their teachers to perform outreach activities to get children more interested in science. "It is important for faculty to make children realize the importance of science, particularly nanoscale science which is spearheading the next industrial revolution. The earlier students get excited about science, the more likely they will pursue the field and someday make a great difference."

Obare credits her success to her ambition to keep learning

and the motivation that she finds through the hard work of her team of graduate and undergraduate students. "Some of my students amaze me with the drive and determination they have," said Obare. "They are emerging scientists already making significant research contributions." The students that work with Obare are a great example of what this grant can offer for the future.

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*Please note that the OVRP
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