the NEURON

WEST VIRGINIA JOURNAL OF SCIENCE AND RESEARCH | FALL 2010

tina cartwright - marshall university

West Virginia Higher Education Policy Commission

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On the Cover

MARSHALL UNIVERSITY PROFESSOR HELPING TO SHAPE TOMORROW'S SCIENTISTS

This is the fifth in an ongoing series of features on scientists and science educators from institutions across West Virginia.

For Dr. Tina Cartwright, a life-long interest in science began with a 7th grade project aimed at determining if current cloud conditions can predict weather patterns. Her friend's father was a pilot, and took them to the National Weather Service in Charleston.

"I was simply enamored by the technology," says Cartwright, assistant professor of education at Marshall University and former West Virginia State Climatologist.

From that day on, the Scott Depot native knew she wanted to pursue a career in meteorology.

While working on her undergraduate studies in geography and physics at West Virginia University, a time in her life that she describes as, "transformative," Cartwright received a prestigious Barry M. Goldwater Scholarship,.

"I am a firm believer in the importance of undergraduate research, and it had a tremendous impact on me," she said.

Cartwright went on to receive her master's and doctorate degrees in meteorology at Florida State University. After working as a research meteorologist for MIT's Lincoln Laboratory in Massachusetts, she returned home and began teaching meteorology at West Virginia State University, where she began to see that West Virginia students are underprepared for science, technology, engineering and mathematics (STEM) studies.

The goal to help more students succeed in hard science fields like meteorology brought Cartwright to Marshall University as program director for MU-ADVANCE, a program sponsored by the National Science Foundation (NSF) that seeks to increase the representation and advancement of women in academic science and engineering careers. Cartwright then filled a faculty opening in the College of Education and Human Services.

"To me, this was an opportunity to address the need to encourage science learning," Cartwright said.

Through two NSF awards – a $148,000 grant in 2006 and a $799,990 grant in 2007 – Cartwright has been able to work even harder toward this ambition. The 2007 award allowed her to begin COMETS (COMmunities Educating Tomorrow's Scientists), an after-school science enrichment program for low-income, underrepresented and minority students in grades 3-5 in Kanawha County.

"There isn't enough emphasis on STEM fields in elementary school, and this is a critical deficit we need to overcome in order to see more students pursue higher education in STEM," she said.

"Growing up, I was encouraged and expected to go to college. I hope to help students broaden their horizons to include STEM education."

> "I am a firm believer in the importance of undergraduate research, and it had a tremendous impact on me."
>
> Dr. Tina Cartwright

also in this issue | FALL 2010

NANOMEDICINE RESEARCHER, TEACHER, AUTHOR LEADS WVNANO

WVNano, West Virginia's focal point in nanoscale science, engineering and education that was elevated to a statewide initiative through the 2006 RII award, has its first full-time, permanent director. Dr. Diandra L. Leslie-Pelecky comes to WVNano from the Physics Department of the University of Texas at Dallas. Prior to that position, she was at the Nebraska Center for Materials and Nanoscience at the University of Nebraska. A prolific writer and sought-after speaker, she is the author of two books, including *The Physics of NASCAR* in 2008.

WEST VIRGINIA RECEIVES LARGEST NSF GRANT IN STATE HISTORY

The National Science Foundation (NSF) has awarded $20 million to West Virginia's Experimental Program to Stimulate Competitive Research (EPSCoR), marking the largest single NSF award in state history. This five-year Research Infrastructure Improvement (RII) award will boost academic research and upgrade infrastructure at West Virginia University, Marshall University, West Virginia State University and other institutions. It will be matched by $2 million from the state and $2 million from participating universities.

U.S. Senators Jay Rockefeller and Joe Manchin, governor at the time, applauded the announcement, which was made by Dr. Stephen J. Kopp, President of Marshall University, at the statewide STaR Symposium in Huntington.

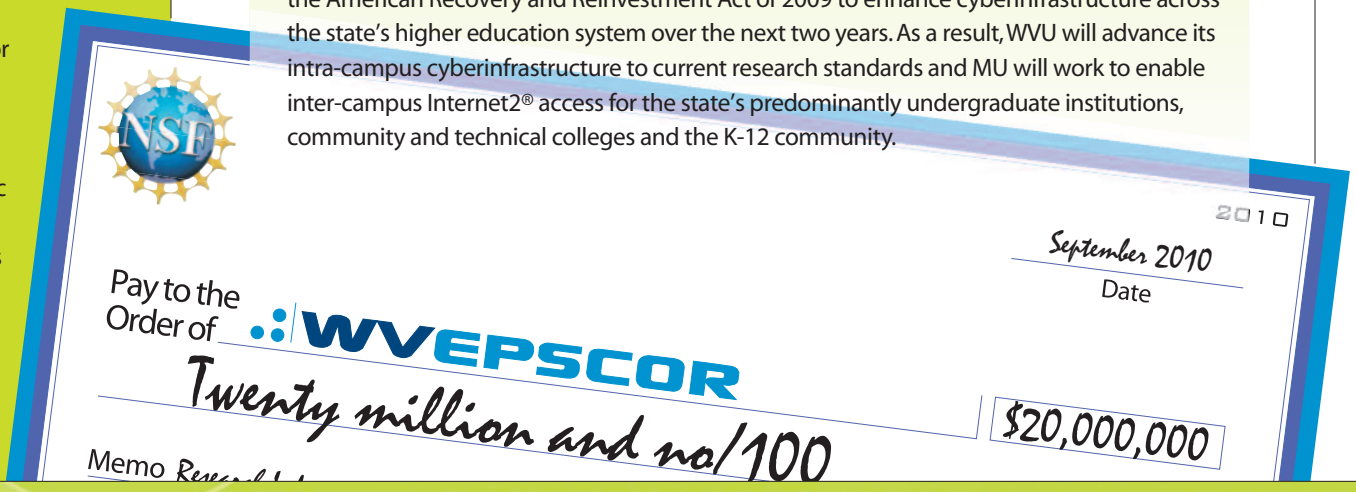
"This is about research, innovation and creating good jobs – I have every confidence that we will see this award intensify as faculty members are recruited, research ramps up and new discoveries are made," said Rockefeller, a long-time champion of EPSCoR.

"Higher education fuels economic development nationwide, and this is precisely the type of infusion that helps West Virginia grow and diversify," Manchin said.

As a result of the RII award, researchers at the three institutions will bring together bionanotechnology and molecular sciences to create hand-held devices – essentially a laboratory on a chip – that can remotely identify potential environmental threats, pollutants and even diseases. Innovations in these areas have the potential to create new marketable technologies and devices – and the jobs to manufacture them.

Additional institutions will have the competitive opportunity to collaborate on this groundbreaking research and position themselves for additional funding of their own.

West Virginia also was recently awarded a nearly $1.2 million award from the NSF through the American Recovery and Reinvestment Act of 2009 to enhance cyberinfrastructure across the state's higher education system over the next two years. As a result, WVU will advance its intra-campus cyberinfrastructure to current research standards and MU will work to enable inter-campus Internet2® access for the state's predominantly undergraduate institutions, community and technical colleges and the K-12 community.



about the Division of Science and Research

The Division of Science and Research, Higher Education Policy Commission, provides strategic leadership for infrastructure advancement and development of competitive research opportunities in science, technology, engineering and mathematics disciplines. The office directs the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR) in West Virginia, coordinates scientific research grants to academic institutions from federal and state agencies, and conducts outreach activities to broaden the public's understanding of science and technology. More information – **www.wvresearch.org**

POWERFUL ENERGY RESEARCH AT WVU

West Virginia University's research portfolio is comprehensive, and its focus on energy grows on a seemingly daily basis.

The Advanced Energy Initiative (AEI), led by interim director Joe Kozuch, serves as the coordinating force for university-wide energy research in science, technology and public policy. By connecting and facilitating WVU's many efforts and vast expertise, the AEI works to improve the university's ability to address complex energy problems.

"West Virginia is clearly an energy state, and we have capitalized on that," said WVU President James Clements, who recently highlighted research as a foundational component of the university's vision for the year 2020.

Recent Highlights

- U.S. Department of Energy Secretary Stephen Chu, joined by U.S. Senator Jay Rockefeller and President Clements, announced a $40 million carbon capture and storage initiative that will be led by a new National Energy Technology Laboratory-sponsored Regional University Alliance, which includes WVU and four other prestigious universities.
- The U.S. Department of Energy (DOE) announced a $12.5 million, five-year grant for a WVU-led consortium to work in partnership with China on clean-burning and carbon capture energy technologies.
- Through a licensing agreement, two international firms are set to commercialize WVU-patented technology for converting coal into synthetic oil in a carbon dioxide-free, economical process.
- WVU was selected by the DOE for research on a project, led by Dr. Xingbo Liu, that will develop technologically-sophisticated monitoring networks for advanced fossil energy power systems and further develop the university's Energy Materials Science and Engineering program, which was made possible by a 2007 Research Challenge Grant from the state.
- The DOE awarded a $462,429 grant to Dr. Earl Scime, chair of the physics department at WVU, to build a magnetic fusion device and conduct an experiment in cooperation with Florida A&M University and Auburn University that could convert fusion energy into long-term electricity.
- The WVU Department of Geology and Geography received a software grant renewal worth $11.8 million from Landmark Graphics Corp. of Houston, Texas, that will contribute significantly to the potential for improved energy research and education in the department.

More information – **energyresearch.wvu.edu**

MINE SAFETY TECHNOLOGY AT MARSHALL ATTRACTS INTERNATIONAL INTEREST

A 25-person delegation of mine safety specialists from China recently visited the Marshall University Visualization Lab located in the Weisberg Engineering Laboratories.

The delegation, which included mining engineers, researchers and administrators from mining companies and government mine safety bureaus, was in the United States to learn more about mine rescue technology in this country. Their visit to the visualization lab, which was particularly timely given the fatal gas leak at a mine in Yuzhou, China, included a demonstration of its capabilities related to mine rescue training.

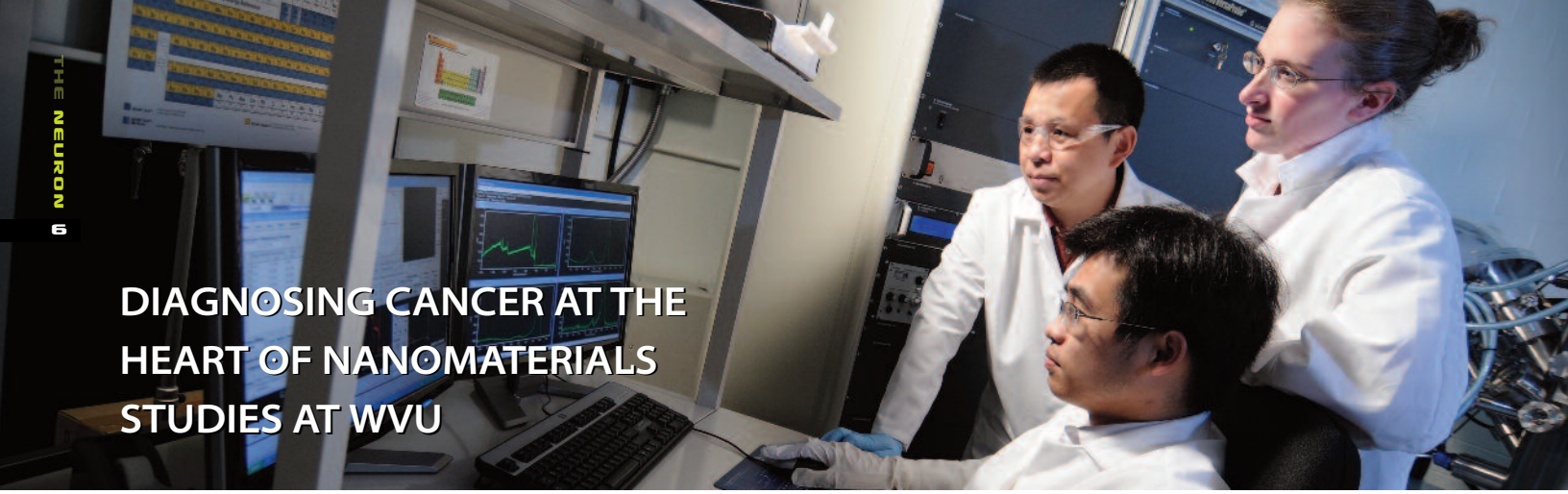
Among its many applications, the state-of-the-art lab, which was partly supported by a 2009 National Science Foundation cyberinfrastructure award, features a large screen with an illustration of a coal miner. Users can guide the miner through a mine and engage in simulated safety challenges – all in a safe, virtual environment.

Delegation members said they would take what they learned at the lab back to China to see how they might be able to improve emergency mining rescue efforts.

Their visit was mentioned in a USA Today story on how the successful and historic Chilean mine rescue underscores the importance of mine safety in China.

In the article, Dr. Tony Szwilski, MU engineering professor who has worked in China and led the demonstration for the delegation, said, "All of the safest coal, nearest the surface, was mined a long time ago, so all mines, in China and the U.S., are going deeper. Everybody needs to up the ante in mine safety and training."

Photo – Rick Haye, Marshall University



DIAGNOSING CANCER AT THE HEART OF NANOMATERIALS STUDIES AT WVU

Dr. Nick Wu, an associate professor in the Department of Mechanical & Aerospace Engineering at West Virginia University who was supported by the 2006 National Science Foundation Research Infrastructure Improvement award, is focusing on work that could change lives.

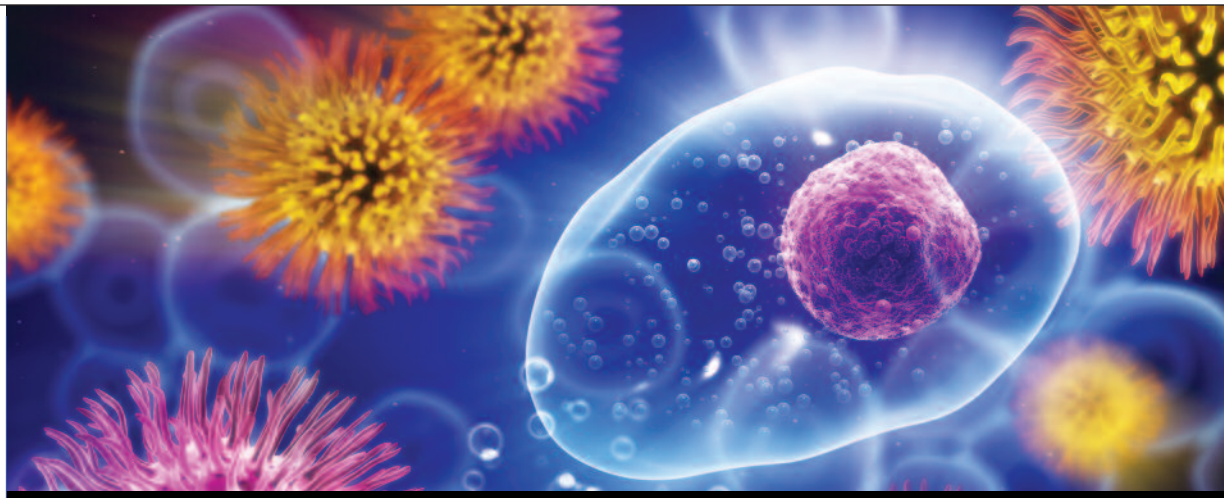
Wu recently received two National Institutes of Health (NIH) grants to develop nano-biotechnology to diagnose cancer and toxicity of nanoparticles. By incorporating nanomaterials with biomolecules, he is working to develop biosensors for detection of cancers, drugs and environmental toxins.

"Our goal is to develop new nano-biotechnology to improve our quality of life and also to protect humans against the side effects of new products," said Wu, a participant in the WVNano initiative.

More information – **www.cemr.wvu.edu**

50 YEARS of LEADERSHIP in HEALTH

The Robert C. Byrd Health Sciences Center at WVU recently celebrated its 50th anniversary. Over the past half-century, thousands of WVU Health Sciences graduates have cared for patients in every corner of the state and across the country, and West Virginians who need specialty care continue to rely on WVU healthcare physicians. Research is a vital part of these efforts. According to a recent study, the state's economy is $2.2 billion larger because of the presence of WVU's health sciences schools, clinics and hospitals.



WVU CENTER FOR NEUROSCIENCE AWARDED $5.5 MILLION NIH GRANT

The NIH recently awarded the WVU Center for Neurosciences a five-year, $5.5 million grant to support new research technologies on the WVU Health Sciences campus.

The award will be used to further develop five core research facilities – genomics, advanced imaging, transgenic research, non-linear optical microscopy and tissues processing – used extensively by neurosciences faculty and other researchers.

The funding was awarded through the NIH National Center for Research Resources Institutional Development Award program, designed to build Centers of Biomedical Research Excellence (COBRE). This is the third COBRE grant awarded to the Center for Neuroscience since 2000, marking a total investment of more than $23 million – which has spurred an additional $13.5 million in research funding from other sources.

More information – **www.hsc.wvu.edu**

WATERMELON DNA RESEARCH AT WEST VIRGINIA STATE UNIVERSITY GAINS ATTENTION

Matt Browning, Communications Specialist, West Virginia State University

Research on the effect of DNA methylation on molecular diversity of watermelon heirlooms conducted by scientists and students at West Virginia State University has landed on the front cover of the international journal, *Euphytica*. The journal covers theoretical and applied aspects of plant breeding and is published by Springer Netherlands.

Watermelon is the fifth most economically-important vegetable crop and is grown in 44 states in the United States. There is wide phenotypic diversity in terms of growth habits, fruit traits and resistance to biotic and abiotic stress.

Understanding this diversity was the goal of the research conducted by Padma Nimmakayala *et al* at WVSU's Agricultural and Environmental Research Station and Department of Biology, in collaboration with the USDA Agricultural Research Service.

The study was done on 47 heirloom watermelon cultivars grown under uniform conditions in a growth chamber. The researchers generated DNA methylation profiles to explore whether patterns of genetic relationships were consistent with those determined in previous research that found narrow genetic diversity at the DNA sequence level. The study revealed that the diversity at the methylation level is higher (43 percent) than the genetic diversity revealed by DNA markers (20 percent) on the same set of heirloom DNAs.

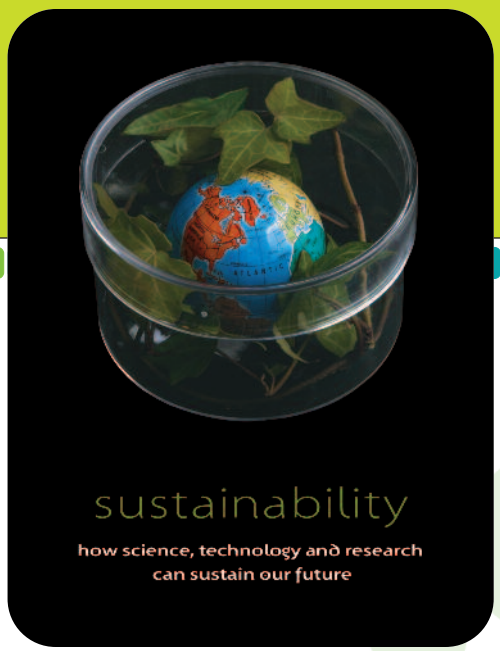
Participants in the study say that knowledge of DNA methylation profiles in cultivated watermelon will contribute to the current understanding of molecular divergence of watermelons.

RESEARCH TRUST FUND SUPPORTS NEW PROGRAMS AT FAIRMONT AND SHEPHERD

Governor Joe Manchin, prior to becoming U.S. Senator, announced the newest awards supported by interest earned on the state's "Bucks for Brains" Research Trust Fund. Fairmont State University and Shepherd University are set to launch programs in two rising science, technology, engineering and mathematics (STEM) areas, while actively working to raise funds to match the state's investment.

Fairmont State University will receive $100,000 for the "New Media Assessment Project," which will enable the university's Open Source Intelligence Exchange to create a process that allows the university to capture large amounts of content from new media applications such as Twitter, social networking sites and discussion boards, and to consequently generate new knowledge about national security and law enforcement threats.

Shepherd University will receive $99,892.50 to develop an "Undergraduate Research and Experiments in Robotics-Based Accomplishments for STEM Students" project. Through this robotics initiative, the university will seek to improve the recruitment and retention of STEM students and better prepare them for careers in robotics engineering and science.



STaR SYMPOSIUM 2010 BRINGS TOGETHE

In September, faculty members, students, researchers and representatives of West Virginia's technology and business communities came together on the Marshall University campus in Huntington for the third biennial statewide STaR (Science, Technology and Research) Symposium. The focus was on competitively-funded research moving West Virginia forward in competitiveness and innovation.

Justin Hilliard
Fairmont State University

DENIALISM

How Irrational Thinking Hinders Scientific Progress, Harms the Planet, and Threatens Our Lives

MICHAEL SPECTER

Michael Specter, author of *Denialism* and staff writer at The New Yorker covering science, technology and public health, spoke to the crowd regarding the public's growing mistrust of science and its by-products – and the benefits they provide humankind.

Two MU student researchers cap
stu

Melinda E. Varney (above), a biomed
as the "Graduate Researcher of the
major also from Huntington,

Runners-up were **Heaven Oliver-**
and **Kiril Tuntevski** of the Ur

Additional details, including full proceedin

R WEST VIRGINIA'S SCIENCE, TECHNOLOGY AND RESEARCH COMMUNITIES

This year's theme, "Sustainability: How Science, Technology and Research Can Sustain Our Future," was underscored during panel discussions on energy, the environment, cyberinfrastructure and the economy.

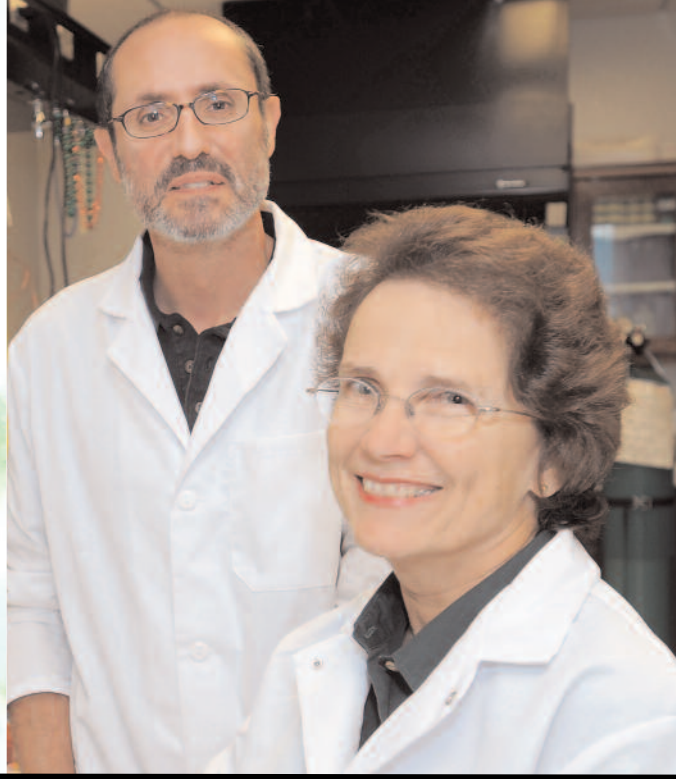
tured first place in both categories of the symposium's udent poster competition.

dical sciences Ph.D. student from Huntington, was recognized e Year." **William A. Kelly** (below), an undergraduate biology was named "Undergraduate Researcher of the Year."

Kozup of West Virginia University in the graduate student niversity of Charleston in the undergraduate category.

Students enjoying STaR

ngs and presentations, are available at **www.wvresearch.org.**



RESEARCHERS AWARDED MORE THAN $1 MILLION FOR BREAST CANCER STUDIES

Two researchers at Marshall University have been awarded federal funds totaling more than $1 million to assess the effects of omega-3 fatty acids on breast cancer development.

The U.S. Department of Defense Breast Cancer Research Program awarded Dr. Elaine Hardman, associate professor in the Department of Biochemistry and Microbiology at the Joan C. Edwards School of Medicine, and Dr. Philippe Georgel, associate professor in the Department of Biological Sciences, competitive grants of $460,249 and $320,750, respectively. Hardman and Georgel received two of only 18 grants awarded nationwide through the program.

Over the next two years, Hardman and Georgel will use the funds to confirm earlier observations that consumption of canola oil, as a source of omega-3 fatty acid, in the maternal diet of mice could reduce risk for breast cancer in the offspring, and to identify the genetic changes associated with a maternal diet that contains omega-3 fatty acid. They hope to discover how canola oil is altering the expression of genes, with the goal of developing a panel of biomarkers to assess risk for breast cancer development in humans.

A third grant of $266,000 to Hardman from the National Institutes of Health will fund the final year of a related four-year study.

MARSHALL RECEIVES $4.7 MILLION FOR CENTER FOR DIAGNOSTIC NANOSYSTEMS

Marshall University has received $4.7 million in federal funding to support the new Center for Diagnostic Nanosystems at the university's Robert C. Byrd Biotechnology Science Center. As a result, researchers at the center will focus on designing, developing and fabricating state-of-the-art diagnostic devices for cancer, cardiovascular disorders, diabetes, dementia, infant care and air and water quality.

"Work at the center will help scientists, physicians and the public better understand and integrate the implications and applications of nanotechnologies, particularly as they unfold over the next decade," said Dr. Eric Blough, the center's director. "The center also will play an important role in stimulating unprecedented interdisciplinary collaboration nationally among faculty members and students in the medical, biological, chemical, physical and life sciences, and engineering."

This funding, which was announced by U.S. Senator Jay Rockefeller, then-Senator Carte Goodwin and Congressman Nick Rahall, was added to Fiscal Year 2009 and 2010 Senate Appropriations bills at the request of the late Senator Robert C. Byrd. U.S. Department of Energy officials have formally released $2.9 million, with an additional $1.8 million expected soon.

More information – **www.marshall.edu/murc/**

WVU BIOMETRICS RESEARCHERS REDEFINING "NIGHT VISION"

Researchers at West Virginia University are developing technology that gives night vision a whole new meaning – focusing on facial recognition and gait to identify a person in the dark.

The Night Biometrics Team at the Center for Identification Technology Research (CITeR) is comprised of Drs. Larry Hornak, Donald Adjeroh, Bojan Cukic, Jeremy Dawson, Xin Li, Arun Ross and Natalia Schmid, along with students in the Lane Department of Computer Science and Electrical Engineering.

"Automated facial recognition at a long distance and under both night and bright daylight environments is critical to fixing the identity of individuals who may pose a potential threat," said Nathan Kalka, a doctoral student.

Other research is focusing on evaluating a person's gait.

"We illuminate the person at wavelengths both undetectable by and safe to the human eye," said fellow doctoral student Brian DeCann. "From the video of their movement, we evaluate the shape characteristics one displays while walking. Such a capability has potential for acquiring biometric traits from individuals at a distance when traditional biometrics such as face and iris are unavailable."

Their work, funded under an Office of Naval Research award, was integrated into ONR's Green Devil II initiative, a combination of several emerging ONR and various Marine Corps Programs of Record capabilities.

CITeR is the only National Science Foundation Industry/University Cooperative Research Center focused on the rapidly-growing areas of biometric identification and credibility assessment technology. WVU is the center's founding and lead site.

More information – **www.citer.wvu.edu**

NEWS AND ANNOUNCEMENTS

WVU PHYSICS PROFESSOR RECEIVES LANDMARK PIRE AWARD

Dr. Maura McLaughlin, assistant physics professor at West Virginia University, is the principal investigator on a $6.5 million grant from the National Science Foundation to launch a PIRE (Partnerships for International Research and Education) project, which will establish an international team for the detection and study of low frequency gravitational waves using timing observations of millisecond pulsars. This team will use radio telescopes around the world, including the two largest: the 105-m Green Bank Telescope in Green Bank, W.Va. and the 305-m Arecibo telescope in Puerto Rico. More information - **http://nanograv-pire.wvu.edu/**

NSF GRANT ENCOURAGES UNDERGRADUATE MATH AND BIOLOGY STUDIES

The NSF recently awarded a group of Marshall University faculty members -- Dr. Marcia Harrison, Dr. Simon Collier and Dr. Jeffrey Kovatch from the Department of Biological Sciences, and Dr. Anna Mummert and Dr. Scott Sarra from the Department of Mathematics – a $236,659 award to establish an Undergraduate Mathematical Biology Research program. The program will include a number of initiatives designed to prepare math and biological sciences undergraduate students for graduate study and future careers that combine the two fields.

WVU RESEARCH CITED AS RECOVERY ACT SUCCESS

Vice President Joe Biden, along with White House science advisor Dr. John Holdren and representatives of leading research universities, recently discussed the impact of the American Recovery and Reinvestment Act (ARRA) on research and innovation. As part of the discussion, the work of a WVU research team was highlighted. Led by Dr. Lan Guo, researchers have identified a gene pattern associated with lung cancer patients who are at risk for recurrence of the disease. These new findings could have a major impact on survival rates for this disease.

MARSHALL PALEONTOLOGIST SHARES DISCOVERY AT INTERNATIONAL SYMPOSIUM

A Marshall University professor, whose fossil research led to the discovery of a plesiosaur - Tatenectes laramiensis - in the Bighorn Basin of Wyoming several years ago, accepted an invitation to share his findings with the National Science Foundation of China. Dr. Robin O'Keefe, an associate professor in the university's Department of Biological Sciences, presented his discoveries in August during the International Symposium on Triassic and later Marine Vertebrate Faunas at Peking University in Beijing. After the two-day symposium, O'Keefe and colleagues from around the world spent a week exploring fossil sites in China.

NSF FUNDS WVU RESEARCH ON MOUNTAINTOP MINING, WATER PATTERNS

Dr. Nicolas Zegre, hydrology professor in WVU's Division of Forestry and Natural Resources, has been awarded a seed grant from the NSF to study the scale and extent of the hydrological effects of mountaintop mining in the Appalachian region. The objective of Zegre's research will be to examine what happens to the flow of water in areas affected by mountaintop mining to better understand the factors behind flooding that is sometimes attributed to the mining practice. His work will provide necessary and more reliable data for formulating public policy initiatives that have local and national implications.

NEW WEBSITE PROVIDES WINDOW TO NASA RESOURCES

A website created by the Center for Educational Technologies at Wheeling Jesuit University helps teachers and parents take advantage of the vast educational resources available from NASA. The NASATalk online collaborative (**www.nasatalk.com**) gives educators a virtual place to talk about the many opportunities available from the space agency.

MINORITY ENROLLMENT & GRADUATION NEWS

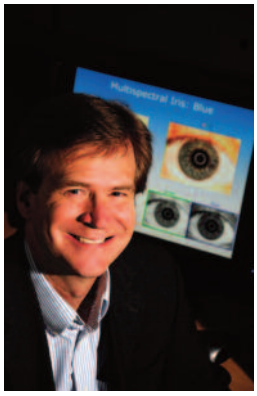
West Virginia University is experiencing another record-breaking enrollment year, and the growth includes minority enrollment. Minority citizen enrollment represents 12.2 percent of the freshmen class, up from 9.6 percent in 2006. At Marshall University, a national report has shown that the university is successful in graduating African-American students at the same rate as white students. The report dug beneath national college-graduation averages and examined disaggregated six-year graduation rates at hundreds of the nation's public and private institutions.

FORUM HIGHLIGHTS STATE'S GROWING TECH INDUSTRY

Representatives of academia, government and the private sector in West Virginia outlined the challenges and opportunities involved in growing the state's technology economy during a forum in September on the campus of Marshall University. Dr. Kevin DiGregorio, executive director of TechConnect West Virginia, said, "There is broad recognition among policy and opinion leaders in West Virginia that we must continue to put in place the building blocks to grow our technology economy." More information – **www.techconnectwv.org**

NOAA ANNOUNCES SUPERCOMPUTER CENTER IN FAIRMONT

The National Oceanic and Atmospheric Administration recently announced a $27.6 million ARRA investment to build a new state-of-the-art supercomputer center in Fairmont. The supercomputer, which will predict and study weather patterns better than ever before, and its center are being built at the Interstate 79 Technology Park. It will lead to greater understanding of climate change and help reinforce north central West Virginia's reputation as an emerging high-tech hub.



WVU PROFESSOR TO SERVE AT NSF

Over the next year, Dr. Larry Hornak, Byrd Professor in the Lane Department of Computer Science and Electrical Engineering and founding director of CITeR at West Virginia University, will lend his expertise to the National Science Foundation in Washington, D.C., where he has received a new appointment as program director in the Division of Industrial Innovation and Partnerships of the Engineering Directorate.

MARSHALL SEMINAR SERIES HOSTS PHARMACEUTICAL EXPERT

The Marshall Institute for Interdisciplinary Research (MIIR) hosted a program in October featuring a presentation by Blair Gibson, Marshall University alumnus and former executive director for Portfolio Strategy and Strategic Planning at Merck & Co. He focused on research and development productivity and opportunities for academic collaboration in the pharmaceutical industry. MIIR was established as a result of West Virginia's "Bucks for Brains" Research Trust Fund.

WV PUBLIC BROADCASTING LAUNCHING "MOUNTAIN STATE SCIENCE" SERIES

Early next year, West Virginia PBS is premiering its "Mountain State Science" series on its new weekly program, *This Week in West Virginia*. Mountain State Science is funded by the National Science Foundation's West Virginia Experimental Program to Stimulate Competitive Research (EPSCoR). Upcoming stories in the series will spotlight Marshall University's 3-D Visualization Lab, Shepherd University's Renewable Energy Program, West Virginia University's Mountaineer Robotics Team, Wheeling Jesuit University's Center for Educational Technologies, and West Virginia research companies like MATRIC of South Charleston. *This Week in West Virginia* airs Fridays at 8pm on West Virginia PBS. Check weekly listings for program schedules – **www.wvpubcast.org**

SBIR NATIONAL CONFERENCE HELD IN NOVEMBER

The 2010 SBIR (Small Business Innovation Research) National Conference, "Making Connections," was held November 8-10 in Oklahoma City. As scientists move their research from concept to prototype to commercialization, meeting with other innovators in the industry, as well as large federal agencies, can yield insights and lessons learned that will enhance their chances for success – which is the type of opportunity the conference provides. More information – **www.sbirok.org**

INTERESTED IN REVIEWING PROPOSALS?

Are you interested in serving as a reviewer for the West Virginia Higher Education Policy Commission's research grant programs? We are always looking for talented faculty with an eye for promising research in all STEM areas. For more information, contact Dr. Jan Taylor at jan.taylor@wvresearch.org

COMMENTARY

U.S. Senator Jay Rockefeller, Chairman of the Senate Committee on Commerce, Science, and Transportation

PROMOTING RESEARCH TODAY, INVESTING IN TOMORROW

From advancements in nanotechnology and biometrics, to cures and treatments that truly save lives – scientific research has far-reaching, meaningful effects. That's why providing funding for research is so essential. It equips scientists and researchers with the resources they need to make significant strides in science and enrich our nation's future.

But for America to truly grow and compete, none of our states can be left behind. Fortunately, the National Science Foundation's Experimental Program to Stimulate Competitive Research has helped states like West Virginia become an important part of nationwide scientific advancements.

Prior to this program, federal research dollars tended to go only to large states and a few well known research universities. But EPSCoR helps smaller states compete for and win merit-based awards from the NSF. The grants help states become more competitive – giving researchers the opportunity to carry out their explorative initiatives, compete for even more funding, and create new technologies, products and jobs.

Since its inception, EPSCoR has established a proven track record of stimulating research and helping to drive economic growth and diversification in West Virginia. Over the last eight years, our state has competed for and been awarded $44.5 million in direct federal support of research infrastructure through EPSCoR. These investments have supported growth from $34 million in annual federal research expenditures beyond EPSCoR in 2000 to $174.5 million in 2009.

A historic development came just recently, when the NSF awarded West Virginia its largest award yet -- $20 million to strengthen infrastructure and launch research in bionanotechnology over the next five years at West Virginia University, Marshall University, West Virginia State University and other institutions.

This Research Infrastructure Improvement program has the potential to create technologies that would have widespread and significant impacts on security, environment and medicine. It can spur innovation and create new opportunities and jobs – high-tech jobs we'll need for the future.

I have supported EPSCoR since its early beginnings, and I'll continue backing this crucial program as the Senate Committee on Commerce, Science, and Transportation continues working on the America COMPETES reauthorization of 2010.

Without question, initial America COMPETES legislation that contained key provisions for EPSCoR had a dramatic impact on funding levels and research development in West Virginia – and this year's reauthorization is fundamentally important to continuing and growing the successes of our research institutions.

As this legislation boosts America's competitiveness, it boosts West Virginia's as well – something I wholeheartedly support. By protecting and promoting programs like EPSCoR today, we are ensuring a more competitive, inventive and successful tomorrow.

FROM THE VICE CHANCELLOR: Research & Development on the Rise in West Virginia

West Virginia's science and research activity is at its highest peak in our state's history. According to data recently released from the National Science Foundation, federal academic research and development expenditures in West Virginia soared from $34 million in 2000 to $174.5 million in 2009.

Over the past eight years, West Virginia has been awarded $44.5 million in direct federal support of research infrastructure through the Experimental Program to Stimulate Competitive Research (EPSCoR). The state created the West Virginia Research Trust Fund, or "Bucks for Brains" program, an unprecedented $50 million research endowment. And we secured $10 million in state funding through the Eminent Scholars Recruitment and Enhancement initiative, which has recruited scholars with demonstrated research competitiveness to West Virginia.

These programs support activities that make West Virginia more competitive with each new discovery. And they are at the heart of what we are doing statewide to fuel competitive research, knowledge creation and economic growth.

Through a coordinated effort that includes federal and state research dollars, faculty recruitment and support, student training and public outreach, we are working to broaden our state's horizons. According to the impressive activity our research investments are spurring, it is becoming evident that our approach is working.

Carpe Diem,

Paul L. Hill, Ph.D.
Vice Chancellor for Science and Research
West Virginia Higher Education Policy Commission

Division of Science and Research
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