the NEURON

WEST VIRGINIA JOURNAL OF SCIENCE AND RESEARCH

WINTER 2011

West Virginia Higher Education Policy Commission

WVEPSCOR

NSF

On the Cover

WVU ASTROPHYSICIST MAKING WAVES, DISCOVERING NEW PULSARS

Dr. Maura McLaughlin, West Virginia University astrophysics professor, has reached astronomical heights in her young career.

In 2004, she was part of a team that discovered the only known double-pulsar system – two pulsars locked in close orbit around each other. After discovering a new class of collapsed stars in 2006, McLaughlin received a highly-competitive Sloan Research Fellowship, was part of a team that discovered 17 new millisecond pulsars, and landed an award from the National Science Foundation (NSF) to set up an international research team to detect gravitational waves.

Beyond her internationally-recognized research, McLaughlin also serves as a role model. By working with the National Radio Astronomy Observatory (NRAO) in Green Bank, W.Va. on the Pulsar Search Collaboratory, she helps engage teenagers in a massive search for new pulsars.

Funded by the NSF, this project connects students from West Virginia and eight other states with WVU and NRAO astrophysicists to analyze pulsar search data taken with the Green Bank Telescope. Students conduct the analyses themselves, which means any pulsars they find are their own. McLaughlin provides instruction through the program with her husband, WVU physics professor Duncan Lorimer, and NRAO colleagues.

"I love working with the students. We have fun and we benefit immensely from their help," McLaughlin said. "I try to show the students that scientists are real people – that we can also have families and lives outside of science. I worry that too many students, girls in particular, feel like they need to choose between science and a life – and that is just not true. You really can have it all."

McLaughlin and Lorimer have two young sons, Callum and Finlay, and are expecting their third child. She says having children has brought a greater sense of balance to her life.

"Before the kids, I worked all the time – and now it's just impossible for me to do that. I'm much happier, and my time management and organizational skills are much better," she said. "Being a parent, you really appreciate every second of every day."

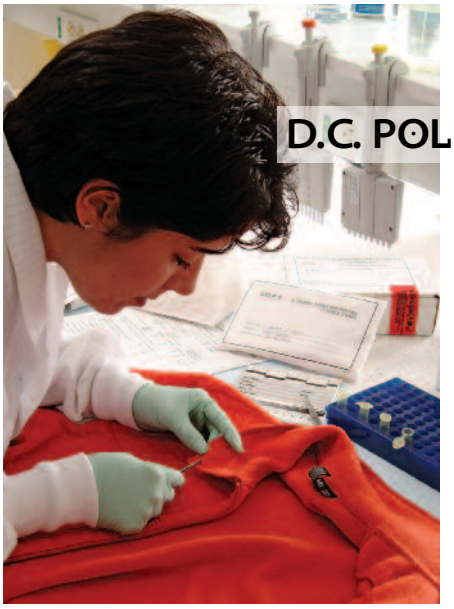
With a new $6.5 million award through the NSF's Partnerships for International Research and Education (PIRE) program, McLaughlin's already-packed career has a new and important layer. This project launched a partnership between the North American Nanohertz Observatory for Gravitational Waves and scientists from Australia, Europe and India. They are focusing dedicated research power on the detection of gravitational waves, which have never been directly identified.

"An award of this size is fantastic for WVU and will make a lot of international research and education opportunities available to our students," McLaughlin said. "If we actually do detect gravitational waves – and I believe we will – it will be vastly transformative for physics in general."

Photos – WVU Photography Services

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

also in this issue | **WINTER 2011**



D.C. POLICE RECOGNIZE MARSHALL FORENSICS DEPARTMENT

The Marshall University Forensic Science Center recently was awarded a commendation from the Washington, D.C., Metropolitan Police Department (MPDC) in appreciation for providing intensive DNA training to its forensic analysts. The purpose of the "DNA boot camp" was to prepare four forensic examiners to become qualified to perform DNA analysis on evidence.

Dr. Terry W. Fenger, director of Marshall's Forensic Science Center, said it is an honor to receive recognition for the collaborative effort between the agencies to develop and implement a customized DNA analysis training program conducted at the center. Fenger said it was a privilege to further develop the capabilities of the crime laboratory's excellent staff.

"The forensic scientists from the MPDC were enthusiastic and energetic about their training, and they showed dedication to providing essential forensic services they perform for the justice system," he said.

"Marshall University is recognized for its world-class DNA training program, and the training our examiners have received will give the Metropolitan Police Department's fledgling laboratory a great start," said Peter Newsham, Assistant Chief of Policy of the MPDC. "The courts, prosecutors and the law enforcement community will know that our examiners have completed the best training program that is available."

The training was made possible by National Institute of Justice cooperative agreements in support of training forensic analysts and assisting the state and local crime laboratories with critical needs.

More information - **forensics.marshall.edu**

FORENSICS PROFESSOR LANDS FEDERAL GRANT TO ANALYZE INTERPRETATION OF FIRE DEBRIS

Marshall University has received a $540,752 grant from the National Institute of Justice for a two-year project to study factors that affect interpretation of data by fire debris analysts and to develop a computer program to aid in interpretation.

Dr. J. Graham Rankin, professor of forensic chemistry in the Forensic Science Graduate Program at Marshall, is conducting the study. He said the goal is to help fire debris analysts in crime laboratories and private laboratories better understand how to interpret their results.

A National Academy of Sciences (NAS) report released in 2009 on the practice of forensic science recommended more basic research to determine the reliability of many tests – like fire debris analysis – that depend on pattern recognition. Rankin said the grant program is a positive response to the NAS report.

"Our research will aid in improving the understanding of the accuracy and reliability of the data commonly used by fire debris analysts, and we will be validating techniques," Rankin said. "This interpretation will be used to determine the presence and classification of ignitable liquid residues found in fire debris which may indicate that the fire was deliberately started."

Photo – Marshall University Forensic Science Center

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**

FEDERAL LEGISLATION HOLDS NEW PROMISE FOR WEST VIRGINIA

In December, Congress passed the America COMPETES Reauthorization Act, which makes major investments in innovation through research and development to improve the United States' competitiveness.

U.S. Senator Jay Rockefeller, who serves as Chairman of the U.S. Senate Committee on Commerce, Science, and Transportation, was an avid backer of the legislation. At events across the state in January and February, Rockefeller discussed the opportunities contained in the new law and the overall importance of STEM (science, technology, engineering and mathematics) education.

"According to the Bureau of Labor Statistics, over 80 percent of the fastest growing occupations depend on knowledge of math and science – and on average, high tech jobs pay 86 percent more than the average private sector wage nationwide. I want us to do what it takes to make absolutely sure that our students and higher education establishments have what they need to propel students into high-paying jobs," Rockefeller said. "You might not read about it in the newspapers or see it on television, but this law will increase our nation's innovation, competitiveness and economy through investments in research and education."

In addition to boosting research capacity and enabling faculty members to compete for funding that will strengthen STEM education, the legislation contains provisions that have significant potential for the new West Virginia Education, Research and Technology Park.

> "...this law will increase our nation's **innovation, competitiveness** and **economy** through investments in **research** and **education.**"

TECHNOLOGY PARK HEADS DOWN NEW PATH

December 15, 2010 marked the official transfer of property at the technology park in South Charleston – now the West Virginia Education, Research and Technology Park – to state ownership. Dr. Brian Noland, Chancellor of the Higher Education Policy Commission, which is charged with redevelopment and operations, said the park is "the state's newest and unprecedented research and development endeavor."

"For our state to grow and diversify, we need to strike a smart balance between holding true to our strongest industries and re-tooling ourselves for the skills needed to work in those jobs and new ones now and in the future," Noland said. "Getting there will not be simple, but we have assembled a good team at the park to steer the way in the coming weeks and months, and we have solid recommendations before us. I strongly believe that success at the park isn't a matter of 'if' – it's a matter of 'when.'"

U.S. Senator Joe Manchin visited the park in January and received a technical and graphic presentation of development plans from the Commission and James Skidmore, Chancellor of the Community and Technical College System of West Virginia.

"The West Virginia Education, Research and Technology Park has a promising future," Manchin said. "I appreciate Chancellor Noland and Chancellor Skidmore for meeting with me and showing me a technical presentation that offered detailed animations on the future development plans of the tech park. Research is the key to economic development, and I am truly hopeful that this park will bring education, research and technology together to create new jobs and help further diversify our state's economy."

More information - **www.wvtechnologypark.com**

WVNANO PARTNERS WITH CALIFORNIA COMPANY UNDER NSF GRANT

WVNano, based at West Virginia University, and LabSmith, Inc, a developer of tools for science, are working together to create a portable device that will rapidly identify environmental contamination agents. This work is being made possible by the 2010 Research Infrastructure Improvement grant that was awarded to the West Virginia Higher Education Policy Commission through the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR) last year.

The project, "Environmental Sensing Using a Broadly Selective Aptamer," is a key in WVNano's focus activity of providing infrastructure and research in nanoscale science and engineering while integrating education, workforce development and outreach programs. The joint project will enable the development of a portable identification system, which will have wide-ranging abilities to detect environmental contaminants and provide key information for containment and mitigation.

Dr. David Lederman, WVNano's technical principal investigator on the project, said LabSmith's expertise in nanofluidic experimentation is an excellent complement to WVNano's interdisciplinary research team.

More information - **wvnano.wvu.edu**

PHYSICS PROFESSOR PUBLISHES "MAGNETIC" RESEARCH

Dr. Sergei Urazhdin, assistant professor of physics at WVU and WVNano participant, has published his research findings, "Direct Observation and Mapping of Spin Waves Emitted by Spin-torque Nano-oscillators," in the prestigious science journal *Nature Materials*. His research shows that nanoscale magnetic devices subjected to electrical currents emit magnetization oscillations called spin waves. Urazhdin said the most surprising aspect of the results was that the emission always occurs in a certain, well-defined direction.

NEW EQUIPMENT BOLSTERS NANOTECHNOLOGY CAPABILITIES

West Virginia University is poised to help improve the efficiency of electronic devices, develop smaller and more reliable data storage devices, advance solar energy conversion equipment, make inroads in health care technology, and uncover a host of other innovative discoveries as a result of a $468,389 grant from the National Science Foundation that will fund acquisition of high-technology research equipment.

Dr. David Lederman, principal investigator on the proposal, said the grant will enable the university to purchase and install a pulsed laser deposition system – scientific equipment that will have far-reaching implications for research not only at WVU, but also at regional public and private sites as a result of the WVNano initiative.

"The pulsed laser deposition system is a technique designed to fabricate nanoscale structures with high chemical and structural precision," Lederman explained. "When combined with other advanced tools, it will have great impact on a wide range of energy and health care technologies."

MARSHALL RESEARCH INSTITUTE WELCOMES EXPERT IN BONE GROWTH AND DEVELOPMENT

Dr. Jingwei Xie recently was named senior scientist at the Marshall Institute for Interdisciplinary Research (MIIR). He is the third senior scientist to join the institute, which was created in 2008 through the state's "Bucks for Brains" West Virginia Research Trust Fund.

Scientists at MIIR are conducting vital biotechnology research designed to improve the lives of people everywhere who suffer from Huntington's disease, muscular dystrophy, sickle cell anemia, juvenile macular degeneration and other diseases.

Xie has more than 10 years experience in biomaterials, tissue engineering, micro/nanofabrication, biosurfaces, formulations, drug delivery, biotechnology and nanotechnology. In his most recent appointment as a postdoctoral research associate at Washington University in St. Louis, he developed a number of projects related to biomedical applications.

The goal of MIIR is to develop a focused program of pioneering research dedicated to producing patentable scientific breakthroughs and creating new high-tech businesses based on those discoveries. The institute is building on existing areas of research strength at Marshall and providing opportunities for collaborations with scientists already working at the university.

Xie's group at the institute will focus on bionano-technology and will collaborate with researchers at Marshall's new Center for Diagnostic Nanosystems, where scientists are working to apply advances in nanosensor technology to improve the accessibility and capabilities of rural health care resources.

More information - **marshall.edu/miir**

BURGEONING BIOMEDICAL RESEARCH AT WVSU

West Virginia State University is involved in novel agricultural and environmental research. However, it is not as well known that WVSU scientists also are involved in cutting-edge cancer and cardiovascular biomedical research that may have significant impact on future treatment practices.

Drs. Robert Harris and Gerald Hankins both have major research projects that are part of the WV IDeA Networks of Biomedical Research Excellence (INBRE) program, funded by the National Institutes of Health (NIH). The purpose of this funding program is to enhance biomedical research at West Virginia's undergraduate institutions by supporting acquisition of research equipment, developing pilot projects, and providing summer research experiences for science faculty and students.

Harris has been studying Cardiovascular Smooth Muscle Cells since 2002. The focus of this research group is on how cells are able to sense and respond to changes in their environment.

"We are especially concerned with how smooth muscle cells in blood vessels perform important functions," says Harris. "We hope to learn what signaling pathways are involved and if we can manipulate these signals to alter how the cell responds."

In 2006, Hankins began studying effects of sex steroid hormones and epigenetics in meningiomas. Meningiomas are the second most common central nervous system tumors in the nation, with an incidence rate of approximately 4.5 per 100,000 people each year. Based on that rate, West Virginia can expect 80 new cases per year – and the number may be higher given West Virginia's median age.

Understanding the changes that occur in these cells as they become tumorous can help in developing better treatments, particularly for skull base tumors, which are not always completely surgically removable.

"Very little is known about the biology of these tumors, which occur much more in women than in men," says Hankins. "Therefore, the female sex steroid hormones progesterone and β-estradiol are suspected factors in meningioma tumorigenesis. Our long-term goal is to develop strategies to prevent or slow meningioma tumor growth, which can serve as alternatives or adjuncts to surgery."

Although these are two independent projects, they are complimentary because there are similarities in growth rates and pathways of both tumor development and cardiovascular disease. This allows for active collaboration and strengthens the research.

In total, Harris and Hankins have received more than $2.8 million in NIH funds to develop the biomedical research program on campus. In addition, nearly 40 students, future physicians and researchers have gained unique training and research experience that they need to be competitive professionally and academically.

More information - **www.wvstateu.edu**

8th Undergraduate Research Day

RESEARCH TRUST FUND

Institution	Amount	Project
Fairmont State University	$100,000	New Media Assessment Project
Shepherd University	$99,892.50	Experiments in Robotics-Based Accomplishments for STEM Students project

INSTRUMENTATION AWARDS

Institution	Amount	Principal Investigator
Concord University	$14,861	Dr. David Chambers
West Virginia Wesleyan College	$10,312	Dr. Katharine Gregg
West Liberty University	$19,058	Dr. Heather Kalb
Shepherd University	$17,096	Dr. Adam Parks
Bethany College	$13,511	Dr. Lisa Reilly
West Liberty University	$7,250	Dr. Mohammed Youssef

INNOVATION GRANTS

Institution	Amount	Principal Investigator
Concord University	$40,000	Dr. Joe Allen

SURE AWARDS

Institution	Amount	Principal Investigator
West Virginia University	$75,000	Dr. Keith Garbutt
Shepherd University	$27,000	Dr. Colleen Nolan
Marshall University	$75,000	Dr. Michael Norton
West Virginia Wesleyan College	$53,000	Dr. Jeanne Sullivan

MINI GRANTS

Institution	Amount	Principal Investigator
West Virginia University	$5,000	Dr. Vagner A. Benedito
Marshall University	$5,000	Dr. Derrick R.J. Kolling
West Virginia University	$5,000	Dr. Daryl Reynolds
West Virginia University	$5,000	Dr. Kaushlendra Singh
Marshall University	$5,000	Dr. Suzanne G. Strait
University of Charleston	$5,000	Dr. Xiaoping Sun
Marshall University	$5,000	Dr. Wendy C. Trzyna
West Virginia University Institute of Technology	$5,000	Dr.Ufuk Tureli

AT THE STA

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2 Hannah Cavender, West Virgi
3 Matthew Boots, West Virginia
4 Grace Nyiiro, West Virginia Sta
5 Amy Dent, Bluefield State Col
6 Alan Campbell, West Virginia
7 Amy Parsons-White and Dr. Pl

Photos Courtesy of Martin Valent, W Marshall University

ATE CAPITOL

On January 25, nearly 90 students from 14 institutions across West Virginia presented posters highlighting their scientific research at Undergraduate Research Day at the State Capitol. With work ranging from the use of lipids as biofuels to the study of magnetic nanoparticles for the treatment of cancer, their research represents the breadth and depth of young research talent across West Virginia.

In conjunction with Undergraduate Research Day, the Higher Education Policy Commission recognized nearly $600,000 in state-supported research grants to faculty members across West Virginia at a ceremony at the Culture Center. Commission Chancellor Brian Noland and Vice Chancellor Paul Hill presented awards from West Virginia's Research Challenge Fund and Research Trust Fund, also known as the "Bucks for Brains" program. Also speaking at the event were Marshall University President Stephen J. Kopp and Michele Wheatly, Provost and Vice President for Academic Affairs at West Virginia University.

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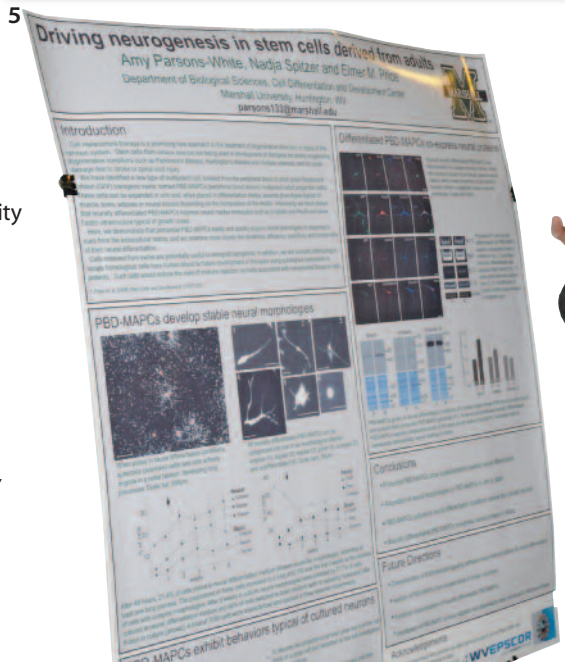

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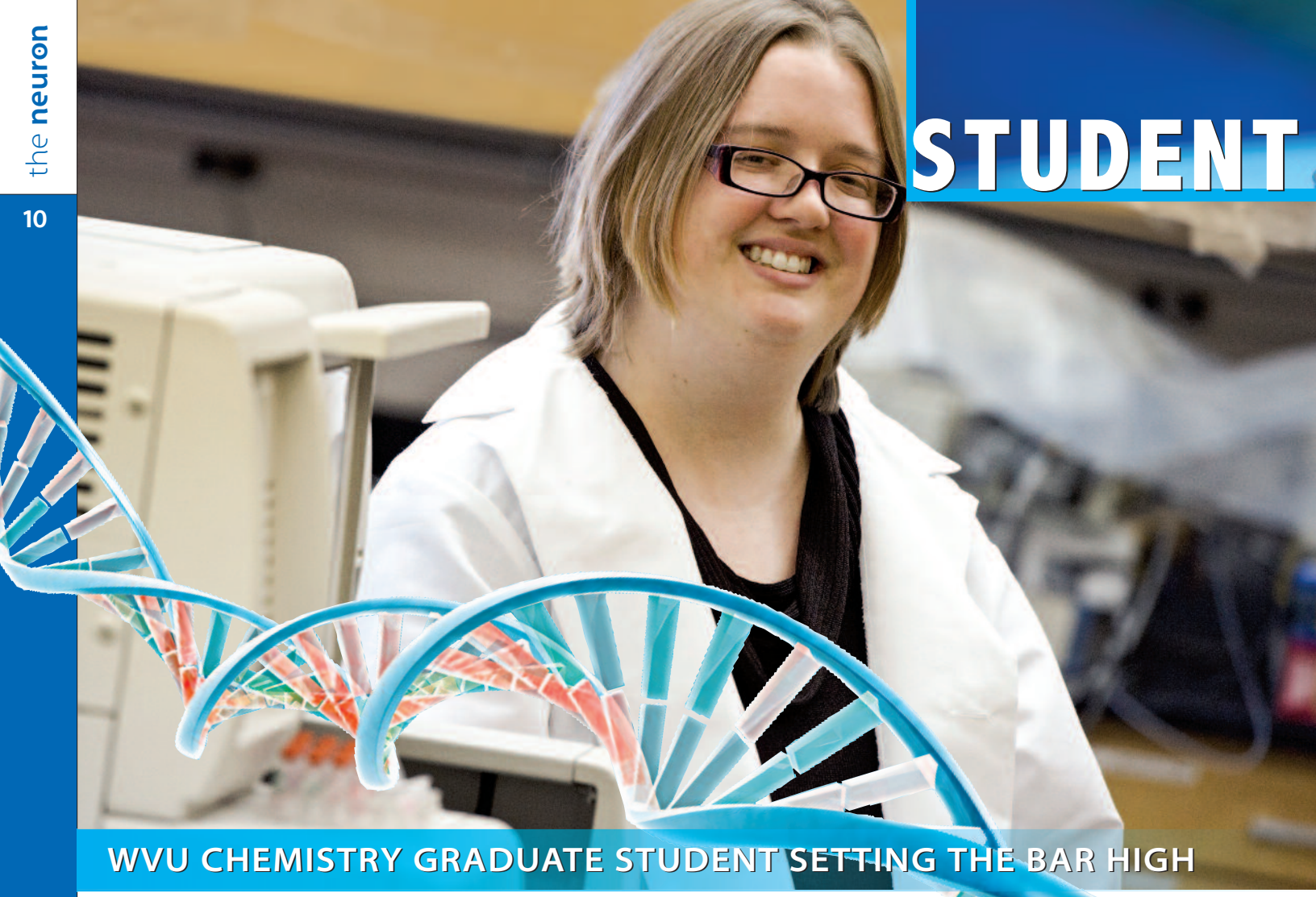


STUDENT

WVU CHEMISTRY GRADUATE STUDENT SETTING THE BAR HIGH

West Virginia University graduate student Stephanie Archer-Hartmann has made her mark at the university, and is hoping to make helpful discoveries in the treatment of chronic diseases.

The chemistry graduate student from Glenville, who is studying bio-analytical separations, is the second WVU student to be awarded a prestigious national fellowship from the United States Pharmacopeia (USP).

Last year, Archer-Hartmann was one of four students nationwide to receive $25,000 from the fellows program, which funds student research in areas relating to standards for drugs and their use.

"It's a really exciting opportunity, and it is as much WVU's award as it is mine," Archer-Hartmann said. "WVU has provided the groundwork for me to do what I am doing now. They have some cutting-edge research happening here that gives both graduate and undergraduate students the chance to work together on meaningful projects."

Archer-Hartmann is conducting research on the recombinant antibodies, or rMAbs, that are used to make drugs that can help treat chronic diseases and cancers.

"The usefulness of such drugs, however, is found to be dependent on the type and amount of sugars decorating these antibodies," Archer-Hartmann said. "I am developing a new method to analyze these glycans taken from antibodies by effectively separating and characterizing these sugars using bio-relevant materials such as enzymes, lectins and phospholipids. Doing this would allow for a quick and inexpensive method of monitoring new rMAb-based therapeutics as they are being developed."

During graduate school, Archer-Hartmann was supported through WVNano and West Virginia EPSCoR, which she says provided her with a positive environment to develop as a research scientist.

The USP Fellows Program is nearly 30 years old, and has invested more than $3 million in 226 Fellowship Program awards.

More information - **usp.org/aboutUSP/careers/fellowship.html**

Photo – WVU Photography Services

Spotlight

MARSHALL STUDENTS HELPING TO DEVELOP TESTS FOR GENETIC DISEASE

Two Marshall University undergraduate students have been conducting research that may help identify new methods for managing patients with a serious hereditary condition that can cause liver problems, kidney failure, cataracts and brain damage.

Over the last couple of years, senior biomedical sciences majors Rachel Blake and Emily Beckelhimer have worked in the lab of Dr. Menashi Cohenford, a professor in Marshall's Department of Integrated Science and Technology, to help develop tests to screen for and manage galactosemia.

The disease affects the body's ability to fully metabolize the simple sugar galactose, which is found in fruits, vegetables, milk and other dairy products. If too much galactose builds up in the blood, serious complications can result.

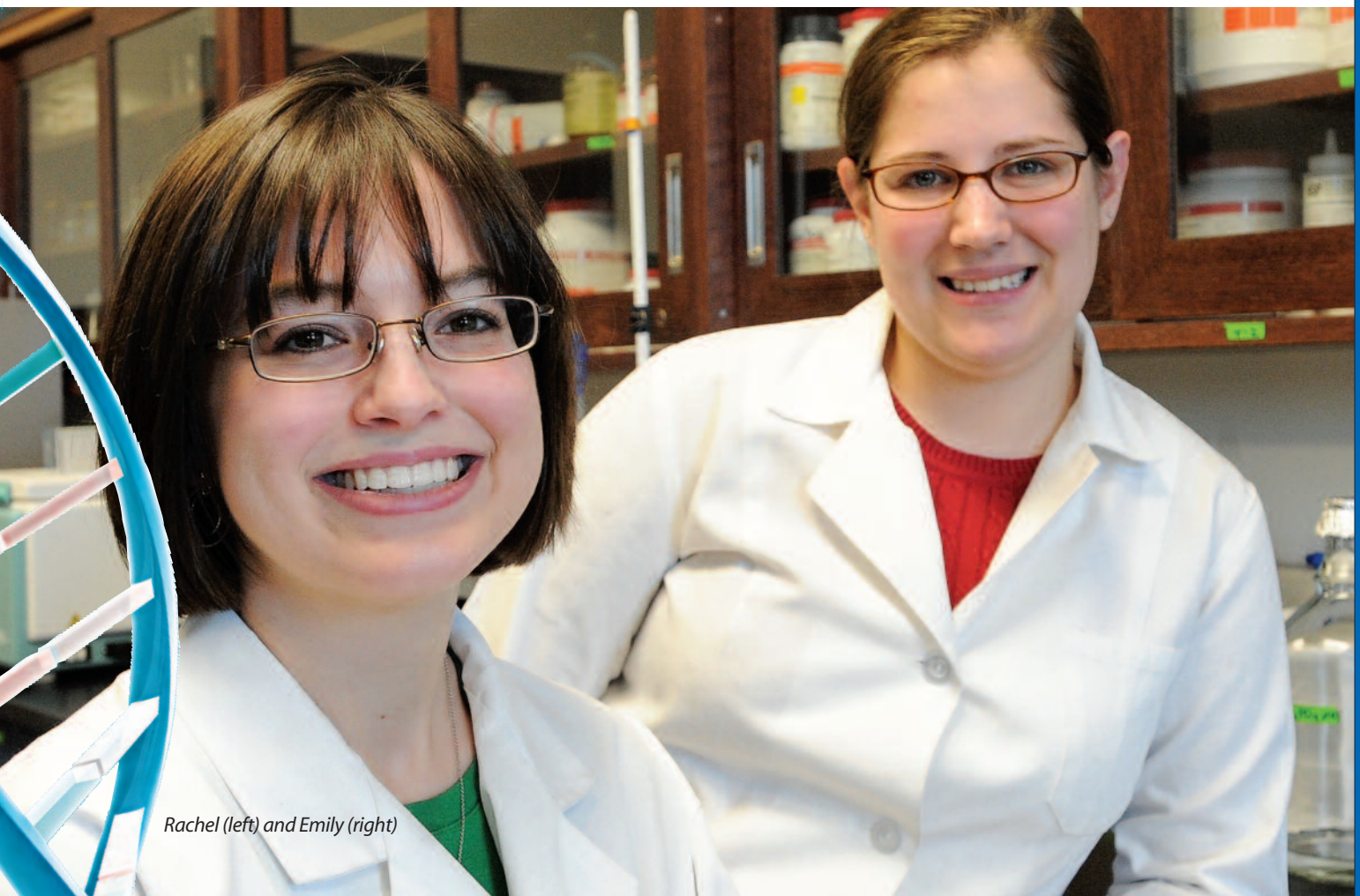
Without treatment, the mortality rate for galactosemia in infants is close to 75 percent. Even if it is caught early, long-term complications can include speech and language impairment, fine and gross motor skill delays, and learning disabilities.

The students say their experience in the lab has given them skills they would not have learned in the classroom alone.

"I was part of every step of the process, from the beginning, through data analysis, to presentation of our findings," said Beckelhimer. "I had lots more responsibility and lots more rewards than I would have had otherwise."

Blake added, "The actual research made the classroom work seem worthwhile, more applicable. I enjoyed identifying a problem and how we could go about solving it."

Blake and Beckelhimer have presented their research findings at PITTCON, an international conference and exposition for laboratory sciences. Blake also has presented the work to state legislators at the annual Undergraduate Research Day at the Capitol event.



Rachel (left) and Emily (right)

Photo – Rick Haye, Marshall University

News & Announcements

PLYMALE RECEIVES NATIONAL TRAILS AWARD

Robert H. Plymale, director and CEO of the Rahall Transportation Institute at Marshall University, was awarded the National Trails Association's 2010 Trails Public Service Award for his support and leadership in trail planning, design and implementation. Plymale is a longtime advocate for constructing and utilizing recreational trails throughout southern West Virginia, and has been a key player in the development of public trails for recreation and alternative means of transportation.

MARSHALL AND WVU GROW "BUCKS FOR BRAINS" RESEARCH PLANS

The state's two research universities are ramping up efforts to make the Bucks for Brains program a success. Marshall University has expanded the scope of its research plan under the Research Trust Fund by allowing officials to solicit and use funds for the engineering, mathematics, and physical science programs. West Virginia University altered its strategic plan to add forensic sciences as an area of emphasis, include a library endowment to support the acquisition of key materials, and remove language to allow WVU to maximize private investments.

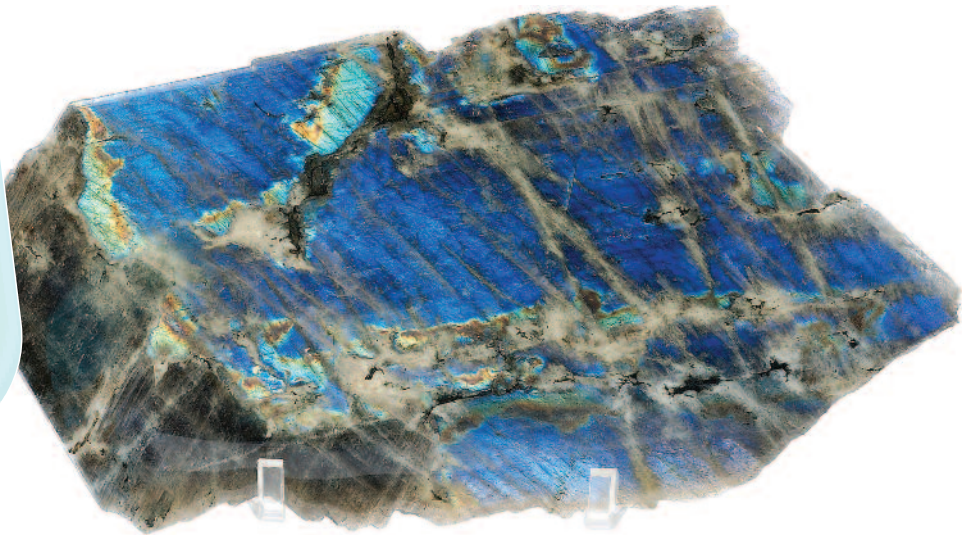
WVU WORKING TO OPTIMIZE MARCELLUS SHALE PRODUCTION

A recent grant for $353,934 from the Gas Technology Institute will allow researchers at WVU's College of Engineering and Mineral Resources to use data-intensive science to optimize natural gas production through Marcellus Shale – an immense stretch of rock that runs deep underground through parts of Pennsylvania, New York, Ohio and West Virginia. Dr. Shahab Mohaghegh is leading the team of researchers. According to a recent WVU study, Marcellus Shale has potential for significant economic development in West Virginia.

MARSHALL RESEARCHERS EXPLORING FEASIBILITY OF INTERMODAL SHIPPING FACILITY

Researchers at the Rahall Transportation Institute and the Center for Business and Economic Research at Marshall University are conducting a feasibility study to explore the need for an intermodal shipping facility in the state. The results of the study, which is being conducted in cooperation with the West Virginia Public Port Authority, will be used to estimate immediate transportation needs and demand for the future. More information - **www.njrati.org**

For the most recent updates and announcements regarding **West Virginia's science** and **research communities**, follow the Division of Science and Research on **Twitter** - **twitter.com/researchwv**



Recent Events

WVU PROFESSOR SELECTED FOR NATIONAL ENGINEERING EDUCATION SYMPOSIUM

Fifty-three of the nation's most innovative young engineering educators – including Dr. Brian Anderson from WVU – were selected to take part in the National Academy of Engineering's second Frontiers of Engineering Education Symposium in California in December. The event provided young professors with a venue to share ideas, learn from research and best practices in education and leave with a charter to bring about improvement at their home institution.

MARSHALL SEMINAR FOCUSES ON TECHNOLOGY TO IMPROVE ECONOMY

In December, Marshall University hosted a seminar about using geospatial and visualization tools to boost the economy. At the session, local economic development officials and policy-makers learned how geographic information systems and other tools available at the university can help project population growth, show prospective companies how they might fit into a specific location, and compare and contrast data from a variety of sources. The seminar was presented by the university's Center for Environmental, Geotechnical and Applied Sciences.

NSF CAREER AWARD ADVANCES BIOMETRIC RESEARCH

Dr. Arun Ross from WVU's College of Engineering and Mineral Resources recently received a renewal on a CAREER Award from the National Science Foundation for biometrics research focused on human recognition. Ross began the project in 2007 with the goal of strengthening the fundamentals of biometrics by designing robust methods for biometric recognition, indexing and fusion.

Upcoming Events

DIVISION SPONSORING WV STATE SCIENCE AND ENGINEERING FAIR

The Division of Science and Research is one of the proud sponsors of the upcoming West Virginia State Science and Engineering Fair, which is set for March 25-26, 2011 at Fairmont State University. More information - **www.fairmontstate.edu/academics/collegeofscitech/wvssef.asp**

SHEPHERD UNIVERSITY HOSTING ROBOTICS COMPETITION

The Department of Computer Sciences, Mathematics, and Engineering at Shepherd University will host the 2011 ShepRobo Fest on March 26-27. The competition will include three robotic events for various age groups: a firefighting contest for middle school through college-aged students, a mech-warfare contest for all ages, and a lego league for students in grades 4 through 8. More information - **www.shepherd.edu/cmeweb/srf/**

MARSHALL HOSTING CYBERINFRASTRUCTURE DAY

On April 7, 2011, Marshall University will host a one-day conference to showcase state-of-the-art computing technologies available to researchers at the university and across the region. Faculty, staff and students from any field and all higher education institutions are encouraged to attend. Members of the high-tech business community, representatives of government agencies, technology providers and other interested parties are welcome. More information - **www.marshall.edu/ciday**

SCIENCE COMMUNICATIONS SYMPOSIUM SET FOR APRIL AT WVU

On April 5, 2011, West Virginia University will host "Science & Technology in Society: Effective Communication Strategies" at the Mountainlair in Morgantown. This inaugural event will include workshops targeting students, public teachers, policymakers, university faculty, members of the media and education leaders. Events will include lectures, a poster session for students, a citizen science event and networking opportunities. More information - **sciencesymposium.wvu.edu**

In conjunction with the science communications symposium, WVU will award the first annual Harley Kilgore Award for Promoting Public Understanding of Science and Research. The award consists of a medallion and honorarium. Kilgore was a U.S. Senator from West Virginia who was instrumental in shaping legislation that formed the National Science Foundation.

RESEARCH FORUM FOR UNDERGRADUATE INSTITUTIONS PLANNED FOR CHARLESTON

On May 25, 2011, leaders and faculty members from West Virginia's primarily undergraduate institutions are invited to attend a one-day event in Charleston focused on research opportunities, technology transfer support and supercomputing tools. Additional details will be available at - **www.wvresearch.org**

COMMENTARY

Anne Barth, *Executive Director, TechConnect West Virginia*

Thanks to the dedicated efforts of state leaders and university researchers, academic research funding in West Virginia has grown exponentially in recent years. Our scientists are studying an amazing variety of subjects - making important discoveries to cure disease and improve health, make our coal mines safer and our environment cleaner, allow our existing industries to be more productive and competitive, and introduce new products and services to benefit West Virginians.

At Progenesis in Huntington, a spin-out of Marshall University, researchers have developed a super-absorbent alginate with a variety of uses, from homeland security to food and cosmetics. Derek Gregg and his colleagues at Vandalia Research, also in Huntington, provide custom, large-scale DNA production using a proprietary, patent-pending "Triathlon" system. And in Morgantown, Steve Turner is leading Protea Biosciences as new drugs are developed to treat chronic pancreatic conditions, common in cystic fibrosis patients. They are patenting their processes, which can lead to more disease treatments, and they have invented a revolutionary cell analysis device that no one else has—it's available only in Morgantown, West Virginia.

This incredibly future-oriented research emanating from Huntington and Morgantown is proof that innovation can happen anywhere - not just in Silicon Valley, Route 128, or Research Triangle. And in every cure discovered, in every new device invented, in every technology developed, there is the potential to launch a startup firm, creating new jobs, raising the standard of living, and diversifying the economy.

TechConnectWV works to derive full value from university research, strengthen the partnership between researchers and entrepreneurs, and develop a pipeline for commercialization in West Virginia. Because we know, and studies prove, that the best way to create more jobs in any state is to grow them at home. In fact, roughly 95 percent of all job gains each year in an average state come from the expansion of existing businesses or the creation of new companies, according to a recent Brookings Institution report.

The majority of our academic research is underway at West Virginia University and Marshall University, and both institutions have technology transfer offices to help commercialize the fruits of their research. However, academic research is also occurring at the state's smaller colleges and universities. How do they commercialize research? Do they have the tools needed to be successful?

In early January, TechConnectWV launched a study to find out, by determining the need for an Innovation Transfer Consortium serving those predominantly-undergraduate institutions, both public and private.

Ultimately, such a consortium could connect researchers at our smaller institutions of higher education with private sector partners who could help them commercialize new products, services, and technologies. Other tech transfer issues - protection of intellectual property and licensing deals - could also be addressed through such a consortium.

The study will be completed by the middle of May, and plans are already underway for a one-day event on May 25, 2011 for the predominantly-undergraduate institutions to present the findings. This forum will provide an opportunity for researchers and faculty to share ideas, collaborate and discuss tech research and innovation, tech transfer, and support for their research initiatives. In other words, to connect!

That's our mission at TechConnectWV, and we intend to live up to it. Because good ideas can happen anywhere, including West Virginia.

TechConnectWV works to enhance awareness, spur collaboration, and raise the discussion of issues surrounding technology-based economic development. Its goals are to diversify the state's economy, promote economic prosperity, and create high-paying jobs.

From the Vice Chancellor: INVENTING OUR FUTURE

From national news broadcasts to local debates, a resounding message about our economic future is clear: if our nation and state are to grow and succeed, we must become more innovative. As President Obama said in his recent State of the Union Address, "The first step in winning the future is encouraging American innovation."

He issued a call to action to move America forward by reaching unprecedented levels of research and development. Congress took an important leap in that direction in December by passing the America COMPETES Reauthorization Act, which supports a broad range of science, technology and research initiatives, including EPSCoR.

Without this overarching support, we would not be able to do what we do in West Virginia – such as build up infrastructure that encourages learning or provide unique hands-on opportunities for our science and math students. But equally important is the commitment of our scientists and faculty members – the people on the front lines who are not only molding young students, but also penning the proposals that initiate new investments and ignite new discoveries.

The onus is on West Virginia's science and research community to seize what the President referred to as our generation's "Sputnik moment," and to place West Virginia at the forefront of a national movement that will reinvent our future. As growing evidence, WVU just signed a pivotal agreement to collaborate with China – as the lead U.S. university – on clean energy technologies, tackling both energy use and climate change on a global scale.

Our "Sputnik moment" is now! Here at the Commission, our goal is to support the science community and drive innovation, knowledge creation and learning in STEM, so West Virginians from Morgantown to Shepherdstown and Huntington will play an increasing role in solving the nation's technological problems.

With our advancing infrastructure, industry and faculty talent, I'm confident that vision can become reality!

Carpe Diem,

Paul L. Hill, Ph.D.
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