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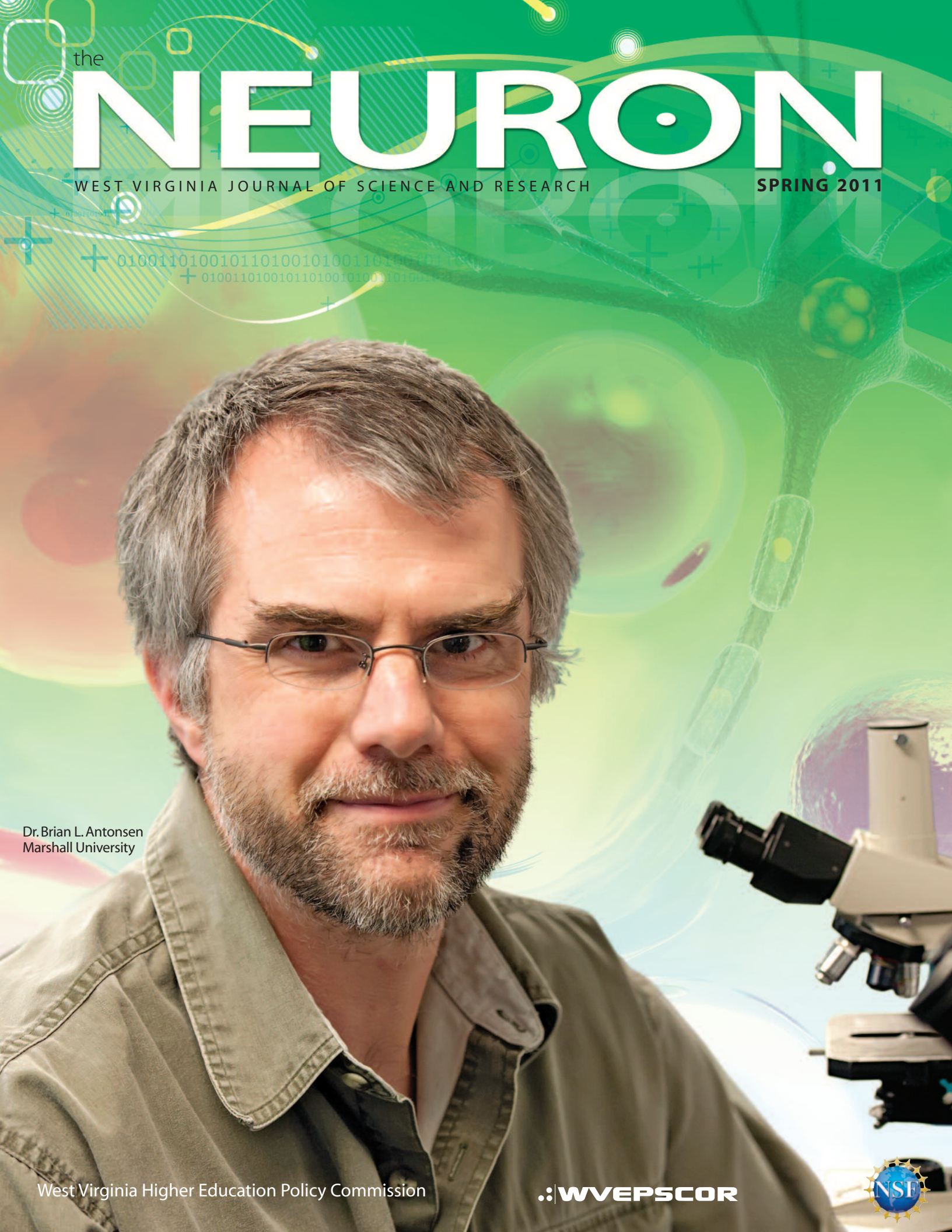
WEST VIRGINIA JOURNAL OF SCIENCE AND RESEARCH

SPRING 2011



Dr. Brian L. Antonsen
Marshall University

West Virginia Higher Education Policy Commission

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NEUROSCIENTIST FINDS HIS NICHE AT MARSHALL UNIVERSITY

After spending eight years at Georgia State University, Dr. Brian L. Antonsen was looking for a new challenge.

"I decided I wanted to be at a smaller institution, with a focus on undergraduate education and training. My wife and I also wanted to relocate from Atlanta to a smaller community," he said. "We found Huntington and Marshall."

Joining Marshall as an assistant professor of biological sciences in 2007, Antonsen has embraced the campus community.

He has an active research program and is co-director of the university's Brain Awareness Program and its flagship event, the annual Brain Expo—designed to spark children's interest in science and raise awareness of science as a career option.

As leader of Marshall's Emerging Areas Group for the state's Research Infrastructure Improvement award from the National Science Foundation (NSF), Antonsen's research focuses on how an animal's nervous system integrates sensory signals from its environment, and how it controls subsequent behavior. He is particularly interested in discovering how social experiences cause long-lasting changes in the properties of circuits in the brain.

According to Antonsen, although it is well established that dominant animals tend to be bolder while subordinates are more reclusive and maintain a lower posture, there is not yet a comprehensive understanding about how these behavior changes are produced at the cellular level.

"One major study under way in our lab is exploring how the neurochemicals serotonin and dopamine—both of which are intimately involved in producing socially relevant behaviors—act to change the properties of single neurons," he said.

Using the university's new confocal/multiphoton microscope system he helped secure as co-principal investigator on an NSF Major Research Instrumentation award, Antonsen is able to image biochemical properties of neurons in living tissue.

"This technology opens up whole new lines of inquiry," he added. "Our research will benefit tremendously."

Projects in his lab use primarily crustacean model systems, and range from pure animal behavior to cellular and electrophysiological neuroscience to biomechanics.

Antonsen particularly enjoys working with students as they gain experience in a variety of techniques, including electrophysiology, behavioral scoring and tracking, immunocytochemistry and computer modeling.

The Brain Expo is another outlet for his research interests.

The expo brings hundreds of local school children to campus for hands-on activities about the brain, the nervous system and neuroscience.

"We wanted to give kids a different view of science and scientists than they see on most television," he said. "This March we had our third program and it's growing every year."

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

SPRING 2011

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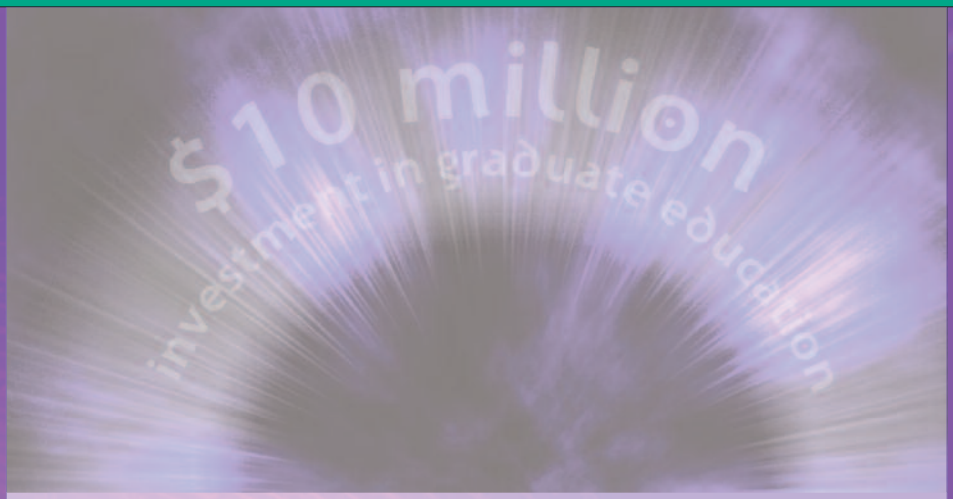
WVU RECEIVES GIFT ENABLING NEARLY $10 MILLION INVESTMENT IN GRADUATE EDUCATION



Graduate research at West Virginia University will take a major step forward with a $4.6 million gift from the Hazel Ruby McQuain Charitable Trust. Combined with matching dollars from the state Research Trust Fund, the gift will create a nearly $10 million endowment in support of exceptionally talented graduate students from all over the world.

The gift creating the WVU Ruby Scholars Graduate Fellowship Program is the largest ever benefitting graduate research fellowships at the University.

"The goal of this new program is to attract and assist exceptionally talented graduate students from across the country who show extraordinary promise in scholarship, research, leadership and service to further develop these talents through the graduate school experience," said Stephen Farmer, member of the McQuain Trust board of trustees, in announcing the gift.

WVU President James Clements said the commitment will be a "game-changing investment" for many exceptional students. "For many students, a graduate fellowship will be a pivotal moment in their lives and give them wonderful opportunities to study and conduct research with some of the world's top faculty right here at WVU.

Specifically, the endowment will create graduate fellowships and advance research in energy and environmental sciences; nanotechnology and material science; biological, biotechnological and biomedical sciences; and biometrics, security, sensing, forensic sciences and related identification technologies.

The fellowships will be merit-based with consideration for graduate students with exceptional talent. Financial limitations or hardships also will be considered.

about the division of science and research

The West Virginia Higher Education Policy Commission's Division of Science and Research directs the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR) in West Virginia. The division also coordinates scientific research grants to academic institutions and conducts outreach activities to broaden the public's understanding of science, technology, engineering and mathematics (STEM) disciplines. For more information, visit **www.wvresearch.org**

This material is based upon work supported by the National Science Foundation under Grant No. EPS 1003907. Any opinions, findings, and conclusions or recommendations expressed In this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

WVU RESEARCHERS GRANTED AWARD TO STRENGTHEN BIOMETRIC SECURITY

A $100,000 award from the National Institute of Standards and Technology will help West Virginia University researchers evaluate and reduce vulnerabilities in biometric security systems.

The award for "Evaluation of Anti-Spoofing Approaches for Fingerprint Biometric Recognition Systems" is being conducted in the WVU College of Engineering and Mineral Resources. Arun Ross, an associate professor in the Lane Department of Computer Science and Electrical Engineering, is the principal investigator.

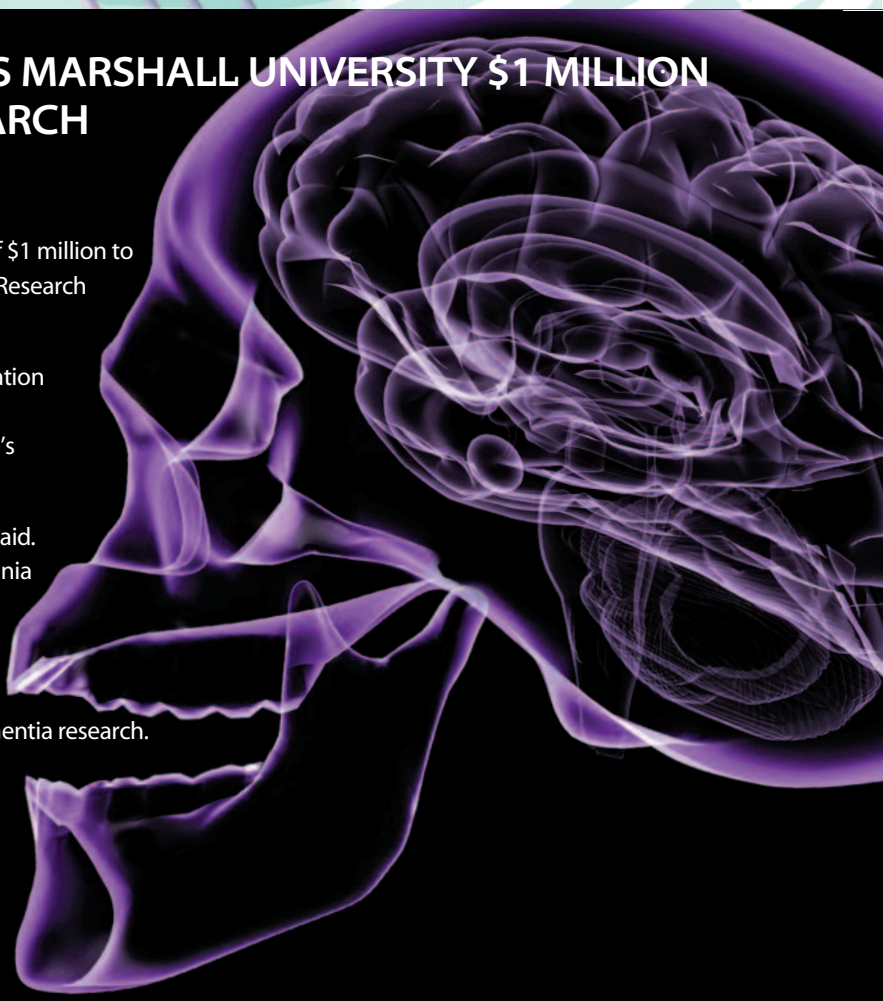
Spoofing is the process by which a fake biometric trait, such as a fake fingerprint generated using PlayDoh, gelatin or latex, is used to circumvent the security offered by a biometric system. These "fake" artifacts can undermine the operation of a biometric system and create security risks.

Biometric researchers have started developing anti-spoofing technology. In this project, WVU's research team, in collaboration with Clarkson University, will develop a scientific framework that will allow them to evaluate the effectiveness of these anti-spoofing algorithms and to make assessments of a system's biometric vulnerability.

"This project will result in a scientific process for evaluating anti-spoofing technologies," said Ross. "It is very important that the loopholes in a biometric system are systematically studied, analyzed and documented. This project is a step in that direction."

GENERAL CORPORATION GIVES MARSHALL UNIVERSITY $1 MILLION TO SUPPORT DEMENTIA RESEARCH

Donation to be matched by "Bucks for Brains"



General Corporation of Charleston has announced a gift of $1 million to Marshall University for establishment of the Maier Clinical Research Professorship at the Joan C. Edwards School of Medicine.

The gift is being made in honor of retiring General Corporation President Ed Maier and will support research in the area of dementia. The donation will be matched through the state's "Bucks for Brains" West Virginia Research Trust Fund.

"I am very humbled to be honored in this manner," Maier said. "The 'Bucks for Brains' program instituted by the West Virginia State Legislature is a compelling reason for our company to give back to my alma mater."

The professorship will support the work of a biomedical/clinical scientist in the School of Medicine engaged in dementia research. This support will foster research dedicated to investigating the cause or causes of dementia, improving the clinical management, treatment and therapeutic outcomes for present and future generations of people who are at risk or are already suffering with dementia.

DIVISION OF SCIENCE AND RESEARCH AWARDS MINI-GRANTS TO FOUR RESEARCHERS

The Division of Science and Research of the West Virginia Higher Education Policy Commission is pleased to announce recipients of $5,000 awards under the Mini-Grants program, which funds summer stipends for faculty members to prepare research grant proposals. The winners and their proposals are:

Gary E. Schultz, Jr.
Marshall University
Diversity, Stability, and Resilience of the Microbial Community of the Ohio River over Temporal and Spatial Scales

K. Subramani
West Virginia University
Algorithmic Issues in Capacity-Constrained Database Migration

Sarah Umphress
West Virginia University Institute of Technology
Organism-Environmental Interactions- an assessment of coalmine waste stream contaminates on the physiology, behavior, reproduction, and regeneration of a freshwater oligochaete, *Lumbriculm variegatus*

Bin Wang
Marshall University
The Design and Development of RNA Nanoparticles for Drug Delivery

West Virginia's Mini-Grants program is designed to aid faculty members in higher education institutions to prepare research or research equipment proposals for submission to external agencies or foundations. The competitive awards are funded through the state's Research Challenge Fund.

CYSTIC FIBROSIS FOUNDATION FUNDS MARSHALL RESEARCH

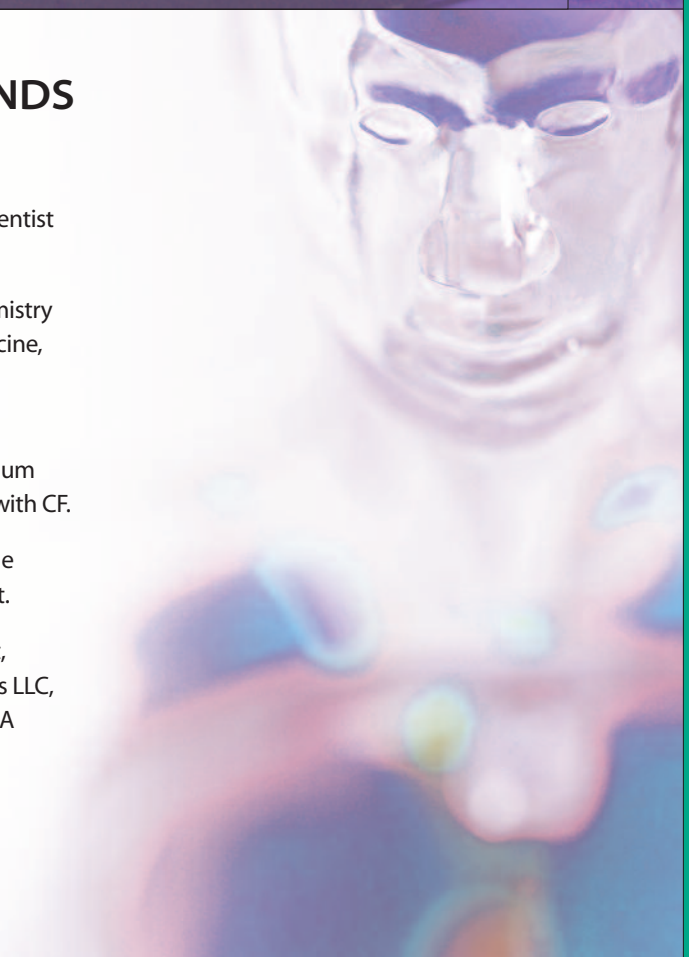
The Cystic Fibrosis Foundation has awarded a Marshall University scientist a two-year, $194,400 grant.

The grant to Dr. Hongwei Yu, professor in the Department of Biochemistry and Microbiology at the university's Joan C. Edwards School of Medicine, will help further his lab's work to explore the factors that control the overproduction of mucus in the lungs of cystic fibrosis (CF) patients.

According to Yu, chronic bronchial pneumonia caused by the bacterium *Pseudomonas aeruginosa* is a life-threatening condition for patients with CF.

Yu said the long-range goal of his research is to better understand the mechanisms of this bacterium to develop a more effective treatment.

Yu's research has also had a regional economic development impact, leading to a patent and the development of Progenesis Technologies LLC, a West Virginia-based biotech research and development company. A second patent is pending.



CYBERINFRASTRUCTURE DAY AT MARSHALL UNIVERSITY HIGHLIGHTS INTERNET POSSIBILITIES

Marshall University hosted its first Cyberinfrastructure Day. More than 150 participants representing nine higher education institutions, government agencies, the business community and high-tech service providers, attended to learn more about state-of-the-art computing technologies available.

Keynote speker and Marshall alumnus F. Selby Wellman, retired executive of Cisco Systems Inc., said most people do not realize the potential the internet still holds.

He said companies like Cisco are continuously doing research that will allow them to take the internet to the next level—working on everything from ways to improve education, healthcare and the business world, to ways to prevent crime. The program featured presentations from faculty members who are taking advantage of technological resources to advance research and research collaborations, win grant funding and enhance students' classroom experiences, as well as student poster and project demonstration competitions.

Dr. Tony Szwilski, director of Marshall's Center for Environmental, Geotechnical and Applied Sciences and chairman of the CI Day planning committee, said scholarly innovation and discoveries that were not possible even a decade ago are now happening thanks to cyberinfrastructure.

Marshall's CI Day was made possible through a National Science Foundation grant that funds "Cyberinfrastructure for Transformational Scientific Discovery in West Virginia and Arkansas (CI-TRAIN)," a partnership among eight higher education institutions in the two states.

"Studies have shown that middle school is a critical age to foster girls' natural curiosity in science and math."

MIDDLE SCHOOL GIRLS DISCOVER THE EXCITEMENT OF STEM STUDY

It was a girls' day out at Mountain State University when approximately 20 middle school students from around the state discovered the excitement of science, technology, engineering and mathematics (STEM) in workshops led by female scientists and science students. The Expanding Your Horizons in Science and Mathematics Conference, sponsored by the West Virginia Chapter of the Association for Women in Science was designed to nurture girls' interest in STEM disciplines.

"Studies have shown that middle school is a critical age to foster girls' natural curiosity in science and math. The EYH conference provides an opportunity for girls to do some fun experiments while interacting with role models in successful science and math careers," said Amy Keesee, a research assistant professor in the Department of Physics at West Virginia University, and president of the state chapter.

Students participated in hands-on workshops on a variety of science, engineering and mathematics topics, including:

- "Become a Legal Drug Dealer," in which students performed pharmacy experiments;
- "It's Electric!" in which students learned about electric motors and vehicles; and
- "Genetic Inheritance of Dragons," in which students learned about genetic traits.

Concurrent sessions for parents and teaches explained college admissions and financial aid science opportunities. The event was supported by a grant from the West Virginia Higher Education Policy Commission Division of Science and Research.

RESEARCH AT MARSHALL UNIVERSITY MAY LEAD TO NEW TREATMENTS FOR PARKINSON'S DISEASE AND OTHER NEUROLOGICAL DISORDERS

A group of scientists at Marshall University is conducting research that may someday lead to new treatments for repair of the central nervous system.

Dr. Elmer M. Price, who heads the research team and is chairman of Marshall's Department of Biological Sciences, said his group has identified and analyzed unique adult animal stem cells that can turn into neurons.

Price said the neurons they found appear to have many of the qualities desired for cells being used in development of therapies for slowly progressing, degenerative conditions like Parkinson's disease, Huntington's disease and multiple sclerosis, and for damage due to stroke or spinal cord injury.

What makes the discovery especially interesting is that the source of these neural stem cells is adult blood, a readily available and safe source. Unlike embryonic stem cells, which have a tendency to cause cancer when transplanted for therapy, adult stems like those identified in Price's lab are found in the bodies of all living animals and do not appear to be carcinogenic.

"Neural stem cells are usually found in specific regions of the brain, but our observation of neural-like stem cells in blood raises the potential that this may prove to be a source of cells for therapies aimed at neurological disorders," Price said.

The team's research was published in a recent issue of the Journal of Cellular Physiology. The lead author of the article is Dr. Nadja Spitzer, a research associate in Price's lab. Other contributors include Dr. Lawrence M. Grover, associate professor of pharmacology, physiology and toxicology; and Gregory S. Sammons and Heather M. Butts, who were both undergraduate students when the research was conducted.

The study was supported with funding from the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR) and the National Institutes of Health.

SHEPHERD FACULTY RECEIVES $28,800 GRANT FROM WV-INBRE

Dr. Seung-yun Kim, Shepherd University assistant professor of computer information sciences, has received a $28,800, one-year grant award from the West Virginia IDeA Network of Biomedical Research Excellence (WV-INBRE) program. This is the second year that Kim has received an INBRE award for his research on Petri nets.

From his first round of INBRE work, Kim published three peer-reviewed technical papers at the International Conference on Bioinformatics and Computational Biology. Students Melissa Pegues, senior chemistry major from Charles Town and Nicholas Drozda, senior computer engineering major from Martinsburg, worked with Kim on his research with collaborating faculty member Dr. Robert Warburton, Shepherd professor of biochemistry.

"This research opportunity will give students a chance to look at other student's work in the biochemistry area and an opportunity to use presentation skills they will use in the future," Kim said.

Research from this project will be presented this summer at the WV-INBRE Summer Symposium at Marshall University in July; work on the project will continue through the academic year 2011-2012.

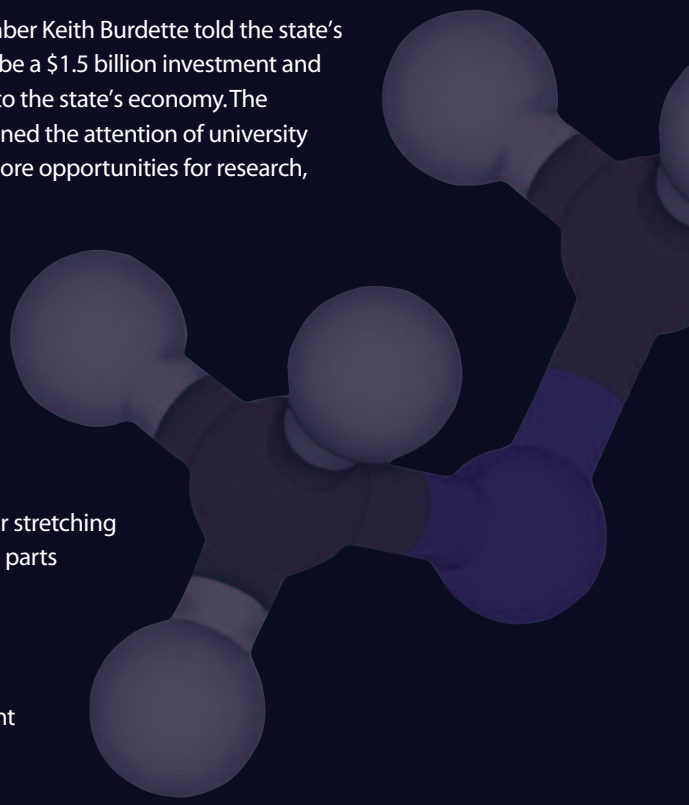
MARCELLUS SHALE: Th

DOES WEST VIRGINIA WANT A CRACKER?

The answer is yes, West Virginia does want a cracker: an ethylene cracker plant that is. With West Virginia's infrastructure, its available sites for chemical manufacturing and its proximity to the Marcellus Shale natural gas formation, state and energy industry officials are hoping to attract a facility that could break down ethane, an abundant liquid in gas extracted from the Marcellus Shale, into ethylene, a base compound used in the manufacture of numerous chemicals and plastics.

Ethylene was first produced from ethane nearly a century ago near Clendenin when West Virginia was home to the pioneering chemical industry because of the abundance of low cost energy and raw materials. Since then, crackers have been located where the gas is, according to Kevin DiGregorio, Ph.D., executive director of the Chemical Alliance Zone. "They moved to the Gulf Coast. They moved to Canada. They moved overseas," DiGregorio said. "The good news is historically they follow the natural gas supply, and we have a new supply here with the Marcellus Shale, so we are hoping history continues to repeat itself."

West Virginia Commerce Secretary and Science and Research Council Member Keith Burdette told the state's Marcellus to Manufacturing Task Force that building a cracker plant would be a $1.5 billion investment and could create more than 2,300 direct jobs, and induce another 3,500 jobs into the state's economy. The enormous research potential based on ethylene availability has already gained the attention of university faculty and technology companies in the state, potentially creating even more opportunities for research, patents, commercial products and jobs.



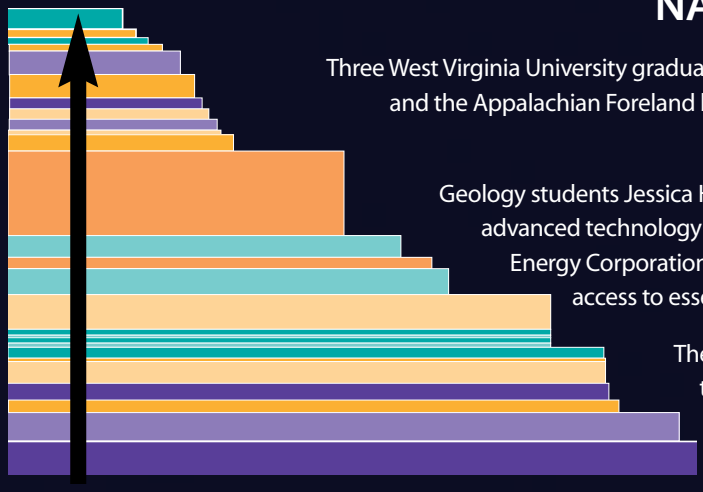
Matt Ballard, chairman of the Charleston Area Alliance and member of the W.Va. Regional Technology Park board, is among those working to attract a plant. "If we work together to attract the investment and win a crucial race, we can help supply the nation with an environmentally responsible energy source," Ballard said. "Existing businesses could flourish and the state's youth would have a concrete reason to remain in what would be a progressive, exciting and innovative state."

The Marcellus Shale formation contains a "super giant" natural gas reservoir stretching under southern New York, most of Pennsylvania, much of West Virginia and parts of Ohio and Maryland.

A study by the WVU Bureau of Business and Economic Research showed that Marcellus activity contributed 7,600 jobs and $2.35 billion of business volume to the state's economy in 2009 and projected growth of five percent to 20 percent per year.

e energy beneath our feet

WVU GEOLOGY STUDENTS RESEARCH MARCELLUS NATURAL GAS EXTRACTION



Three West Virginia University graduate students are investigating the Marcellus Shale and the Appalachian Foreland basins to help scientists better locate and extract natural gas.

Geology students Jessica Hayward, Elise Swan and Tom Donahoe are using advanced technology to pursue thesis research. With funding from the Energy Corporation of America (ECA), the graduate students gained access to essential resources necessary to conduct their work.

Their research will determine the age of rock within the formation, how faults underneath and within the Marcellus Shale formation affect the location and extraction of natural gas, and apply a WVU-developed software module to help drillers determine the best location for wells and the best direction for horizontal drilling.

WJU undergrad receives Appalachian College Association Award to study water quality

Wheeling Jesuit University biology major Andrea Fitzgibbon has received a 2011 Appalachian College Association Colonel Lee B. Ledford Award for Student Research.

The $4,437 award will allow Fitzgibbon to study a stream to see just whether fracking a natural gas well in the Marcellus Shale formation effects water quality. Fitzgibbon will observe the stream to obtain baseline data before drilling by Chesapeake Energy begins. She will then continue to monitor the stream throughout the drilling process to look for changes in water quality.

WVU'S KLINKE STUDIES CANCER CELLS THAT RESIST THERAPY

A National Science Foundation grant aims to help a West Virginia University researcher to outsmart cancer cells that seem to have outsmarted therapy.

Monoclonal antibody drugs and natural killer cells pack a one-two punch in the fight against cancer. But sometimes, cancer cells escape the therapeutic action of these antibodies. A $416,483 Faculty Early Career Development (CAREER) award from the National Science Foundation will allow West Virginia University's Dr. David J. Klinke to help determine why some cancer cells resist these targeted therapies.

Klinke, an assistant professor of Chemical Engineering in WVU's College of Engineering and Mineral Resources, is hoping the fruits of his research can improve therapies for cancer, a disease that kills one in three in developed countries.

An antibody can be produced naturally by the body but can also be engineered commercially to attach itself to specific defects in cancer cells. Antibody-labeled cells provoke the response of natural killer cells, the body's natural first-line of defense in attacking tumors and virally infected cells.

"The emergence of resistance to targeted therapies is increasing," said Klinke. "Without a better understanding of how cancer cells resist the action of molecular targeted therapies, designing effective treatments will remain limited."

Klinke's research uses aspects of cellular engineering, immunology, cancer biology and computationally intensive model-based inference. He is an expert in systems biology, an emerging field that integrates mathematical modeling with experimental study to improve our understanding of biological systems.

The CAREER Program offers the NSF's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.

FACULTY, OTHERS LEARN OF OPPORTUNITIES FOR UNDERGRADUATE INSTITUTIONS

About 40 individuals attended the "Opportunities in Innovation for Undergraduate Institutions" in Charleston. The program allowed faculty and administrators from 17 institutions in the state to share developments in their research efforts, learn about opportunities for collaboration, and connect with technology transfer resources and cyberinfrastructure tools.

"There are terrific research initiatives happening at institutions statewide," said Dr. Paul Hill, vice chancellor of the Division of Science and Research. "And we want to make sure faculty members know the programs and resources available to them. Collaborations, including a new opportunity created by the NSF Research infrastructure Improvement program, are enhanced by providing a forum that brings researchers together on a regional basis."

Learn more about research and research opportunities at **www.wvresearch.org**.

TECH PARK BOARD MEMBERS NAMED; progress underway

The West Virginia Higher Education Policy Commission has named a nine-member board for the W.Va. Regional Technology Park. The board will provide strategic direction for the diversified multi-tenant research, development and commercialization park. The Tech Park's Vision is to focus on energy, chemicals and related technologies for the advancement of education and economic development in West Virginia and the surrounding region.

Through a generous donation from Dow Chemical, the Commission recently acquired a 258-acre property in South Charleston, including laboratory and office buildings, that originally were part of the Union Carbide Technical Center.
Other Tech Park activities are moving forward, including:

- the creation of the West Virginia Regional Technology Park Corporation, the non-profit entity that will operate the park;
- a search for a Tech Park chief executive officer and executive director;
- site preparation for the $15 million Advanced Technology Center to serve the Community & Technical College system;
- a major renovation of Building 2000 to house the Kanawha Valley Community & Technical College, among other tenants.

The members of the new Tech Park board are:

Brian Noland, Ph.D.	Chancellor of the West Virginia Higher Education Policy Commission.
David K. Hendrickson	Chairman of the West Virginia Higher Education Policy Commission and founding managing partner of Hendrickson and Long, PLLC.
Bruce Berry, M.D.	Medical director at Colombo & Stuhr PLLC.
Ellen S. Cappellanti	Partner and chair of Jackson Kelly's Business and Commercial Law Section.
Matthew Ballard	President of the Charleston Area Alliance and Chamber of Commerce, and board member of the Chemical Alliance Zone and MATRIC.
W. Henry Harmon, Ph.D.	President and CEO of Triana Energy.
Charles Patton	President and COO of Appalachian Power.
Georgette George	Director of Summit Financial Group Inc. and Summit Community Bank and President of Ridgeline, Inc.
Paul L. Hill, Ph.D.	Vice chancellor for Science and Research.

Read more about the Tech Park at **www.wvtechnologypark.com**


Brian Noland


David K. Hendrickson


Bruce Berry


Ellen S. Cappellanti


Matthew Ballard


W. Henry Harmon


Charles Patton


Georgette George


Paul L. Hill

News & Announcements

WJU ADMINISTRATOR AND MOON EXPERT AUTHORS NEW BOOK FEATURING HI-DEF PICS

Imagine the Moon up close and personal and in high definition.

Wheeling Jesuit University administrator Charles A. "Chuck" Wood, Ph.D. provided the words to accompany magnificent high definition pictures of the Moon's surface taken by a Japanese spacecraft.

Wood, director of the Center for Educational Technologies and a renowned expert on the Moon's geology, joined Motomaro Shirao, who worked with the Japanese Space Exploration Agency (JAXA), in writing The Kaguya Lunar Atlas: The Moon in High Resolution. The 184-page hardcover version of the book was published by Springer Press and is available for $23.48 through Amazon.

The photos were taken from a spacecraft in lunar orbit in 2007. The Kaguya spacecraft carried two high definition television cameras, one pointing forward and "the other pointing behind it at where it had been," Wood explained. "Most cameras on lunar orbiters have looked straight down. The oblique views of the HDTV provide that 'astronaut-at-the-porthole' perspective. It's much more dramatic than a vertical view."

Wood has authored three other books dealing with the Moon, volcanoes and impact craters. He is a columnist for Sky & Telescope magazine and operates the websites Lunar Photo of the Day (**http://lpod.wikispaces.com/**) and The Moon Wiki (**http://the-moon.wikispaces.com/**).

A-B RESEARCHER USES EPSCOR GRANT TO FIGHT CANCER

An Alderson-Broaddus College researcher is working to find an efficient delivery system to deliver a natural plant compound to treat cancer.

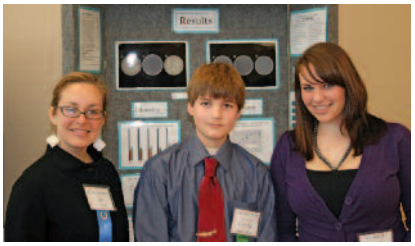
Dr. Yi "Charlie" Chen, Professor of Biology at A-B, received a $50,000 Research Incubator Grant awarded to faculty at primarily undergraduate institutions and community and technical colleges. This grant program is supported by the NSF Research Infrastructure Improvement grant awarded to the West Virginia Higher Education Policy Commission's Division of Science and Research.

A faculty member at A-B College since 2000, Chen's research project is titled "Nanochemoprevention as a novel approach for cancer control." Through his research, Dr. Chen is working to find an efficient delivery system of the natural plant compound kaempferol in treating cancer.

SCIENTISTS: LEARN HOW TO BETTER COMMUNICATE YOUR RESEARCH

Scientists in West Virginia will be invited to a Communicating Science workshop to be held in mid-October. West Virginia EPSCoR and the National Science Foundation will host *Science: Becoming the Messenger - Communicating Science to a Non-Technical Audience.*

The session will be October 12-13 at Lakeview Resort in Morgantown. Watch your mail and check **www.wvresearch.org** for updates.



Dr. Brittan Hallar, Casey Densmore and Erin Weddle

SCIENCE FAIR AT FAIRMONT STATE ATTRACTS STATE'S BRIGHTEST

Some 66 high school students from around the state competed in the 58th annual West Virginia State Science and Engineering Fair March 26, hosted by the College of Science and Technology at Fairmont State University.

Students could enter in one of 13 categories: Behavioral & Social Science, Biochemistry, Botany, Chemistry, Computer Science, Earth & Space Science, Engineering, Environmental Sciences, Mathematics, Medicine & Health, Microbiology, Physics and Zoology. First, second and third place prizes were awarded in each category. And the top winners were:

Grand prize:

Swetha Doppalapudi of Morgantown High School
Biochemistry: "TLR3-mediated signaling protects astrocytes against oxidative stress through SOD2 upregulation."

Grand Prize First Runner Up:

Erin Weddle of Musselman High School
Microbiology: "The Lowly Orange Peel: Cure for Johne's and Crohn's?"

Grand Prize Second Runner Up:

Dahyana Arias of Musselman High School
Medicine & Health: "Kombucha Tea: A Closer Look at the Relationship between the Mythic Cure-All Tea and Cancer."

As part of its sponsorship, the West Virginia Higher Education Policy Commission's Division of Science and Research funded the grand prize winner and one chaperone to go to the Intel International Science and Engineering Fair in Los Angeles. Dr. Brittan Hallar represented the Commission and served as a judge during the event.

High school students are encouraged to start thinking about the 2012 Science and Engineering Fair, which will again be at Fairmont State on March 24.

NEVER TOO EARLY TO STEM-U-LATE INTEREST IN SCIENCE RELATED DISCIPLINES

The June Harless Center at Marshall University conducted its first after-school STEM (Science, Technology, Engineering, Math) program for elementary school children this Spring, and the staff is planning to continue and expand the program to include middle-schoolers for the fall.

About 30 children, some as young as first grade, joined The STEM-tastic Club, part of the Harless Center's STEM outreach, for an hour and a half 'meetings' on Thursdays for 10 weeks at Jenkins Hall on Marshall's Huntington campus. The children participated in LEGO engineering projects in which students used their critical thinking skills to solve real-world problems. They also did a Gigapan project, in which a robotic camera captures large images that can be stitched together, and shared with others around the world.

The after-school STEM program is designed to teach the youngsters as well as teachers. "We want teachers to come and work with the students and learn how to do these programs in their classrooms," said Jenny Nash, STEM integration specialist at the June Harless Center.

For more information, contact Nash at jennynash7@gmail.com.

WHEELING JESUIT PROFESSOR, STUDENT GET SPACE GRANT FUNDING

A Wheeling Jesuit professor and a WJU undergraduate have both earned awards from the NASA West Virginia Space Grant Consortium.

Associate Professor of Physics Dr. Joseph Busche received $8,828 from the Space Grant for his proposal, "Teaching Modern Physics as a Distance Learning Course with a Synchronous Component."

August Capiola, a junior psychology major with a minor in cognitive science, was awarded a $5,000 NASA Undergraduate Research Fellowship. Capiola will work with Dr. Bryan Raudenbush and plans to research the "Effects of Food Neophobia and Food Neophilia on Diet and Metabolic Processing."

The West Virginia Space Grant Consortium is a NASA-sponsored organization consisting of 12 academic institutions and six corporate and scientific partners in the state. It is dedicated to building research infrastructure and promoting STEM education in West Virginia and is housed in the College of Engineering and Mineral Resources at West Virginia University.

ROCKEFELLER ANNOUNCES COMPLETION OF CYBERINFRASTRUCTURE PROJECT TO CONNECT MEDICAL CENTERS TO RURAL HEALTH CLINICS

U.S. Senator Jay Rockefeller and Marshall University President Stephen J. Kopp recently announced the completion of the Huntington Area Metro Fiber Build high-speed medical data connection project.

The project connects rural health clinics to larger hospitals in West Virginia. Soon, West Virginians from all over the state will be able get the medical expertise they need from doctors in major health care centers, without leaving their communities.

Rockefeller said it is an important development for the state's high-tech infrastructure and ability to provide quality health care to residents. He also announced details of a new initiative that will provide nearly 100 state health care locations with access to high-speed internet.

"This technology is the future of our health care system," said Rockefeller. "The high-tech programs in Huntington and southern West Virginia are paving the way and soon rural health clinics throughout the state will be able to connect immediately to larger hospitals to help their patients quicker and more effectively."

Rockefeller was instrumental in gaining approval for an $8.4 million award from the Federal Communications Commission (FCC) through its rural health care pilot program.

Rockefeller and Kopp were joined by Larry Malone, chairman of the West Virginia Telehealth Alliance, at Marshall's Erma Ora Byrd Clinical Center in Huntington for the announcement.

COMMENTARY

Scouting STEM

Commentary by U.S. Representative Nick J. Rahall II

As we welcome the Boy Scouts of America (BSA) to their new reserve in southern West Virginia's Fayette County, opportunities abound for our State's higher education community to blaze new trails with these motivated young people through science, technology, engineering, and mathematics (STEM) education.

A rising tide of STEM education lifts the general caliber of college students nationally. Here at home, not only can we enrich our college recruitment with our own scouts, but we can draw from those across the country and throughout the world.

Most of Neuron's readers are already in tune with the growing chorus supporting increased STEM education to help insure our nation's future economic competitiveness in the global market place. The President's Council on Jobs and Competitiveness is calling for 10,000 more engineers each year. By entering scouting into the STEM equation, we can produce notable results.

Recently, I met with Rex Tillerson, the CEO of Exxon Mobil and the National President of BSA. He too, sees merit in infusing STEM education with the scouting experience, and wants to make it a hallmark of his tenure.

Mr. Tillerson is enthusiastic about the BSA's reserve in Fayette County. The 10,000 acre development is well underway, assisted by a hefty private sector investment of hundreds of millions of dollars. The site will be the home of the Scout's National Jamboree in 2013 and its International Jamboree in 2019. In the interim years, the Scouts will conduct "high adventure" camps. Tens of thousands of scouts will be traveling to our State.

We should view the scouts as future college students, researchers, teachers, employees, managers, and contributing citizens. How we capture their attention and imaginations, and engage their talents and time, is the challenge before West Virginia's higher education community.

A list of scouting merit badges reads like a college of science course catalogue. BSA offers badges in everything from archaeology and engineering to space exploration and veterinary medicine. A "super camp," in which scouts could work toward earning several badges in an intense learning environment, merits our attention.

To explore the super camp and other initiatives, I want to organize a collective among our colleges and universities to build bridges with our companies and communities to scouting. The time is ripe to begin this effort with our West Virginia scouts, so they can spread the word to their young colleagues on what's cool to do before and after their scouting responsibilities are finished the summer of 2013, and beyond.

As additional incentive for faculty, grant programs, like those of the National Science Foundation, require inclusion of "broader impact" criteria in evaluating proposals. In so many ways, the STEM scouting opportunity is a natural to help fulfill program outreach and impact requirements. Who better to craft meaningful proposals and programs, lifting the tide of STEM education, than the creatively pragmatic dreamers and doers of WV EPSCoR, the Higher Ed Policy Commission and its many stakeholders? I welcome your thoughts.

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Division of Science and Research
West Virginia Higher Education Policy Commission
1018 Kanawha Blvd E Ste 1101
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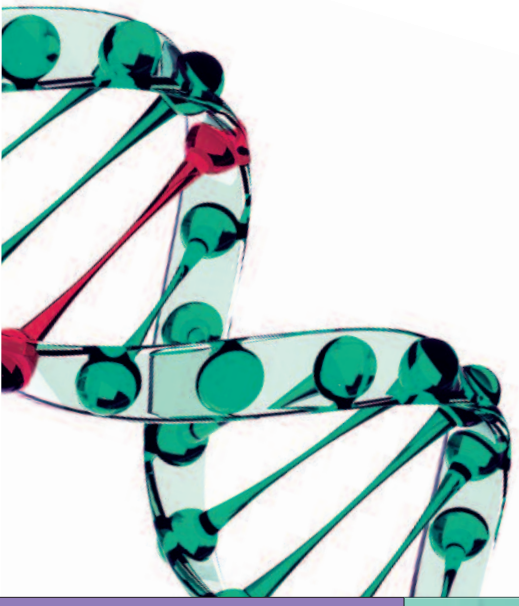

From the Vice Chancellor: OFF AND RUNNING!

As we go to press with this edition of the Neuron, Spring 2011 has been an eventful season. Faculty research planning and reporting to the National Science Foundation, cyberinfrastructure developments, reviews, recruitments and establishing the Regional Technology Park Corporation have created excitement. And, as we now look at summer programs for STEM students, we are off and running!

Beginning with new management challenges of the Regional Technology Park at the dawn of the year, 2011 has been a time of great change and development. As noted herein, we have a prestigious and highly qualified board that will guide the park beginning July 1st while the search for an executive director is well underway. Agreements for use of park facilities with Marshall University and West Virginia University and research corporations are under development as the operations unit has been steadily guiding building construction and renovations in excess of $41 million.

Creation of new endowments for research under the Research Trust Fund have picked up steam at both Marshall and WVU with both institutions having withdrawn a combined $27 million from the fund. With matching corporate gifts, this now represents $54 million invested in our universities. Coupled with awards from the National Science Foundation and the National Institutes of Health, in particular, our research initiatives and campuses have gained unprecedented momentum.

Notwithstanding these successes and developments, we have much more to do. *Vision 2015, The West Virginia Science and Technology Strategic Plan*, will be thoroughly reviewed this summer with an eye toward the next decade. Developments with the Marcellus Shale and the potential technological spin-offs created in chemistry, geology, energy, nanotechnology and climate studies are enormous. As more emphasis is placed on STEM skills to advance these opportunities, strategic planning for appropriate investments in research and workforce has become even more important to the state's economic future.

Carpe Diem,

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