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Dr. Bryan Raudenbush
Wheeling Jesuit University

West Virginia Higher Education Policy Commission

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content

RAUDENBUSH KEEPS RESEARCH VIBRANT AT WHEELING JESUIT

You may have seen his name on the pages of *Good Housekeeping* or *Psychology Today*. Even Lance Armstrong's Livestrong.org website includes a reference to Dr. Bryan Raudenbush and his studies with peppermint and the effect it has on sports performance and appetite.

Raudenbush has a patent on the Peak Performance Sports Inhaler, an all-natural peppermint boost device sold at GNC and online. Athletes sniff the device to get a competitive edge.

He has spent the last 13 years at Wheeling Jesuit University where he is director of undergraduate research and an associate professor of psychology. His specialty is working with odorants and food, an area of research that first drew his interest in graduate school.

"It's an under-researched area. Most times we rely on vision and hearing to get around in the world. Scent and odors are a compelling area for research and discovery," he explained. His students agree.

Says August Capiola, a senior psychology major: "Individuals differ in their responses to foods and odors in various situations. It's really interesting to examine these physiological responses and attitudes that participants attribute to these areas."

Raudenbush is working with Capiola in a food study funded by the West Virginia Space Grant Consortium. One hundred and twenty-five people are participating in the study and writing down everything they eat for a week. Based on a scoring device, the study will result in nutritional implications for two types of eaters: the neophobic, who is afraid of trying new foods and the neophilic, who is happy to try new adventurous foods.

The study, called the "Effects of Food Neophobia and Food Neophilia on Diet and Metabolic Processing," is especially interesting in a culture that is obsessed with food and diet, according to Raudenbush.

"We are predicting that neophobics will have decreased nutrition," Raudenbush said. "We will then devise an intervention system to change neophobic habits and get them to eat new foods." The intervention project will be a follow-up study.

The WJU psychology department previously received grants for equipment from EPSCOR in 2008 and a major grant funded by the National Science Foundation in 2001 to build a sleep performance lab. Raudenbush has been a leader in all the University's research growth.

Wheeling Jesuit stresses student research, providing hands-on and mentored research to assist students into graduate school and post-graduation careers. In fact, 40 percent of Wheeling Jesuit undergraduates reported in a 2010 student survey that they participated in research with their faculty, compared to a national average of 19 percent.

"We want to keep our students' experience vibrant and useful," Raudenbush said. "The research work they do is good for them and good for Wheeling Jesuit. We couldn't get anything done without dedicated students working in our labs."

Find more information at **www.wju.edu**.

WEST VIRGINIA HIGH-TECH SPINOUT COMPANIES SHOWCASED AT BIO INTERNATIONAL CONVENTION

BIO International Convention
The Global Event for Biotechnology

High-tech companies spun out of research at West Virginia's universities were showcased this summer at the BIO International Convention in Washington, D.C. The BIO International Convention attracts an audience of more than 15,000 biotech business leaders, scientists, executives and investors from around the world.

The West Virginia Development Office hosted a pavilion that featured Marshall-related companies Vandalia Research, Progenesis Technologies and Cordgenics. All three were founded based on technologies developed at Marshall and are headquartered in the state.

Other companies represented included South Charleston-based biotechnology company TRAX BioDiscovery, as well as West Virginia University and its spinout, Protea Biosciences.

"In addition to featuring the biotech research being done in West Virginia, the pavilion and the reception helped show the world what a great place our state is to live and work," said Jennifer Kmiec of the Marshall University Research Corporation. "We hope to use the events to help attract new entrepreneurs, inventors, researchers, investors and high-tech businesses to West Virginia."

The Discover the Real West Virginia Foundation sponsored a reception where U.S. Senator Jay Rockefeller invited biotech executives to visit West Virginia this fall as part of a biotech trade/investment mission.

From left, Steve Turner, CEO of Protea Biosciences; Dr. Karel Schubert, executive director of BioWV; Derek Gregg, CEO of Vandalia Research; and U.S. Senator Jay Rockefeller.

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**

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RESEARCH

GIFTS SUPPORT ORTHOPAEDICS AT WVU, SPORTS MEDICINE RESEARCH AT MU

This summer the Cline Family Foundation announced generous gifts to research in West Virginia. In May, the Foundation announced a $5 million gift to West Virginia University. In July, the Foundation announced a $5 million gift to Marshall University.

The Cline Family Foundation was established by Christopher Cline, a southern West Virginia native, Marshall graduate and successful businessman.

At WVU, the School of Medicine will endow the Christopher Cline Chair in Orthopaedic Surgery using $2 million, while $3 million of his gift is earmarked for an athletic facility. Cline decided to endow the chair after getting to know Dr. Joseph Prudhomme, a WVU Orthopaedic Surgery faculty member who will be the first chair holder.

"Chris Cline is a true West Virginian who has never forgotten his roots," WVU President Jim Clements said. "His generosity to WVU will be felt for years to come, especially as we continue to pursue first–class, national-caliber academic, health care and athletic facilities and programs."

At Marshall, the $5 million gift will establish an endowment to support new faculty and scientists in the University's planned sports medicine translational research center. Said MU President Stephen Kopp: "A true son of Marshall, Chris Cline is committed to giving back to this state and to helping our university build a cutting-edge sports medicine research program that will serve the people of West Virginia and our region through discoveries which advance our understanding of neuromusculoskeletal injuries."

Cline grew up in West Virginia as part of a coal mining family. Today, he is principal owner of Foresight Energy, LLC. "I attended Marshall University, have been fortunate to have lived and employed people in West Virginia, and owe the state of West Virginia and its people for much of my success," said Chris Cline. "I wanted to give something back that will be beneficial to the people of the state."

The $2 million for the WVU Orthopaedic Surgery Chair and the $5 million toward Marshall will be matched by the state's Research Trust Fund and placed into permanent endowments.

MARSHALL'S STEM EDUCATION PROGRAM TO REACH MORE ELEMENTARY STUDENTS AND TEACHERS

A $1.17 million National Science Foundation grant to implement after-school science, technology, engineering and mathematics programs for students in Kanawha, Cabell and Wayne counties will allow Marshall University's Tina Cartwright and her colleagues to introduce STEM education to more West Virginia youngsters. U.S. Senator Jay Rockefeller and Congressman Nick Rahall recently announced the grant to help hundreds of students aged 8 to 11 and teachers studying elementary education.

"SCI-TALKS targets students at an age when building interest in science is critical for maintaining the natural curiosity that children have about the world around them," said Dr. Cartwright, assistant professor of education and principal investigator. "By building a safe learning environment outside the formal school day where student talk becomes a central lesson feature, both elementary students and elementary education college students will work together to improve student interest and learning in science, technology, engineering and math."

Cartwright's co-investigators include Dr. Todd Ensign of the NASA Independent Verification and Validation Facility in Fairmont, Dr. Brittan Hallar of the Higher Education Policy Commission's Division of Science and Research, and Dr. Brenda Wilson of West Virginia State University. The funding was awarded through the National Science Foundation.

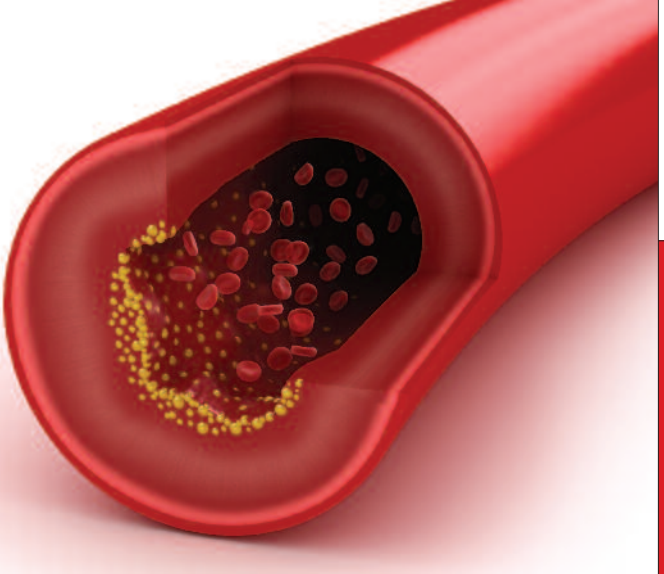
Since 2007, 170 students in Dunbar and Charleston have participated in a similar program. The newly awarded grant will continue a similar program in Kanawha County and expand it to Cabell and Wayne counties.

WVU CHEMISTRY, PHYSICS PROFESSORS WORK TO IMPROVE BIOCHIP TECHNOLOGY

A trio of chemistry and physics professors at West Virginia University are developing a cost-efficient device that would improve biochip technology -- to improve the detection and treatment of disease or alert security and military officials to the presence of chemical or bioweapon hazards.

The National Science Foundation has awarded Lloyd Carroll, assistant professor of Chemistry, a three-year award of $300,000 to improve microchip separation and concentration systems created with Physics Professor Boyd Edwards and fellow Chemistry Professor Aaron Timperman.

The device is able to separate and identify contaminants and biomolecules with a higher sensitivity and lower power requirements than current technology. The use of similar systems, often called "lab-on-a-chip," transfers the complex technology found in hospitals to a mobile, low-powered tool. Lab-on-a-chip systems are often just as sensitive and much less expensive than the full-sized equipment, allowing for use in the field in battle, security, or environmental applications.



WVU CANCER RESEARCHER TO STUDY CHOLESTEROL LOWERING MEDICINE

A researcher at West Virginia University is trying to determine whether a drug commonly prescribed to lower cholesterol can help prevent a serious complication associated with a type of bone marrow transplant used in cancer treatment.

Mehdi Hamadani, M.D., of the Mary Babb Randolph Cancer Center recently won a three-year, $200,000 Career Development Award from the American Society of Clinical Oncology for novel research on atorvastatin, otherwise known as Lipitor, a cholesterol-lowering medicine. He is leading a clinical trial to determine if atorvastatin will prevent acute graft-versus-host disease in patients who've undergone matched sibling bone marrow transplantation.

WVU'S LEGLEITER RECEIVES CAREER AWARD TO STUDY ALZHEIMER'S

WVU Assistant Professor of Chemistry Justin Legleiter has received a National Science Foundation CAREER award of $400,000 to study mechanical changes in cells that may be associated with increased risk for Alzheimer's disease, potentially leading to improved therapy for patients.

The Faculty Early Career Development Program is the NSF's most prestigious award and supports junior faculty who exemplify the role of teacher-scholars through integration of education and research. The award will be dispersed over five years as Dr. Legleiter works to demonstrate mechanical changes in cells that may be associated with increased risk for Alzheimer's disease, potentially leading to therapeutic strategies.

MARSHALL UNIVERSITY ENABLES INTERNET2 ACCESS FOR WEST VIRGINIA SCHOOLS AND OTHER INSTITUTIONS

Students and researchers across West Virginia can now have access to advanced online resources through Internet2, a national networking consortium that provides high-speed bandwidth to the research and education community across the country.

Marshall and the West Virginia Higher Education Policy Commission are sponsoring the West Virginia Internet2 Consortium as the newest Sponsored Education Group Participant (SEGP), making West Virginia the 40th state to offer such connections.

"In rural states like West Virginia, Internet2 is the leveling agent that allows us to compete and collaborate globally while still remaining in our beautiful state," said Dr. Jan I. Fox, chief information officer at Marshall.

The sponsorship allows Marshall to share its nationwide Internet2 connection with the state's undergraduate higher education institutions, community and technical colleges, K-12 community, state and local governments, healthcare facilities, libraries and museums and other partners.

The project was funded by a National Science Foundation grant to West Virginia's Experimental Program to Stimulate Competitive Research (EPSCoR) for a comprehensive initiative to enhance cyberinfrastructure across the state's higher education system. Last year, Marshall received $525,874 from the grant to enable inter-campus Internet2 network access.

Read more at **www.marshall.edu/wpmu/segp**

WVU JOINS OTHER MAJOR UNIVERSITIES WITH GIG.U

Just days after upgrading its on-campus core network to increase network speed from 1 to 10 gigabits per second, West Virginia University announced it has joined 28 other leading research universities across the country to help bring ultra high-speed computer networks to the communities surrounding their campuses.

The goal of Gig.U, the University Community Next Generation Innovation Project, is to help implement regional connectivity that will attract new high-tech companies.

"We have taken fantastic steps forward in our on-campus connectivity that will greatly enhance our academic and research capabilities," WVU President Jim Clements said. "It is now important that these high-speed networks extend into our region to accelerate the way innovation is tested and applied to our local, regional and national economies. Gig.U is a step in that direction."

> "We have taken fantastic steps forward in our on-campus connectivity that will greatly enhance our academic and research capabilities."
>
> WVU President Jim Clements.

MARSHALL PALEONTOLOGIST MAKES INTERNATIONAL NEWS WITH 78-MILLION-YEAR OLD DINOSAUR DISCOVERY

It's not every day you read about a pregnant plesiosaur, which may be why Marshall University Paleontologist F. Robin O'Keefe was the focus of dozens of media outlets in August.

Dr. O'Keefe and Dr. Luis Chiappe, director of the Dinosaur Institute at the Los Angeles Natural History Museum, determined that a unique specimen now on display at the museum are the fossils of a mother-to-be plesiosaur and her embryo. Their findings were published in the August 12 edition of the prestigious weekly journal *Science*.

The 78-million-year-old, 15-foot-long adult specimen is a Polycotylus latippinus, one of the giant, carnivorous, four-flippered plesiosaur reptiles that lived during the Mesozoic Era. The embryonic skeleton within shows much of the developing body, including ribs, vertebrae, shoulders, hips and paddle bones. The research by O'Keefe and Chiappe establishes that these dual fossils are the first evidence that plesiosaurs gave birth to live young, rather than hatching their offspring from eggs on land.

For O'Keefe, who earned a Ph.D. in evolutionary biology from the University of Chicago, the find was exciting. "I wasn't prepared for the emotional response I had," he told CBS News. "It excited me the way I used to get excited as a kid."

BBC, PBS, *U.S. News & World Report,* FoxNews, and countless other media outlets ran the story, many seeking interviews with O'Keefe, who came to Marshall in 2006.

O'Keefe's research on plesiosaurs has taken him around the globe in search of these prehistoric creatures. He is credited with the discovery of a new plesiosaur, Tatenectes laramiensis, a type of marine animal that lived during the late Jurassic age when large dinosaurs, including apatosaurus, stegosaurus and allosaurus, roamed the Earth. O'Keefe made the discovery in what is now the Devils Tower National Monument in Wyoming.

At Marshall, O'Keefe teaches human anatomy and comparative vertebrate anatomy and serves as a graduate adviser. He has published numerous scientific publications, and has served as a scientific adviser for *National Geographic,* IMAX and the Discovery Channel.

COLLEGES AND UNIVERSIT

West Virginia's institutions stayed activ

a. Health Sciences and Technology Academy at Marshall University

One hundred plus rising 9th- and 10th-graders had Fun With Science at Marshall's Health Sciences and Technology Academy (HSTA) Summer Institute, presented in collaboration with West Virginia University.

HSTA is an academic and enrichment initiative designed to encourage high school students to enroll in college and pursue degrees in the health sciences.

b. Students have a blast at WVSU's 6th annual NASA Day

The NASA Day celebration at West Virginia State was "a great opportunity for youths of all ages to experience science in a fun way," said State's Dedriell Taylor of WVSU's Center for the Advancement of Science, Technology, Engineering and Mathematics. "We hope that their experiences here will encourage them to pursue a career in math and science."

c. WVSU summer camp tests kids' sleuthing skills

At West Virginia State's HSTA Forensics Institute, participants viewed a mock murder scene, interviewed suspects and used scientific knowledge to search for clues and solve the crime.

"The kids have fun while they learn at this summer institute," says Camp Director Kelli Batch. "They are nurturing their math and science skills in a format that is unique and interesting to them."

d. High school students and teachers learn together at TREK program

Several high school students performed STEM research with their science teachers at TREK programs at Marshall, West Virginia State and West Virginia University.

A five-year Teacher Research Experience for the Advancement of Knowledge grant funded through WV EPSCoR via a National Science Foundation grant allows high school science teachers to bring a top student for a joint Summer Research Experience, while the teachers continue training the next two semesters on Practical Application and Ethics in Science and Teaching.

Comments from students:

- "Before this, I wasn't really interested in science."
- "I'm glad I came across this because I think I found something else I'd like to do with my life."
- "I've never been around so much technology."

e. Marshall hosts engineering academy for high school students

Thirty-five high school students from six states visited Marshall University for the 11th annual Exploring Engineering Academy of Excellence. "The academy is a good way to make students aware of the importance of engineering and computer science and what exciting opportunities these professions have to offer," says Dr. William Pierson.

f. WVNano at Downtown Morgantown Kids' Day

WVNano affiliates joined the annual Kids' Day event in downtown Morgantown with a booth and demonstrations staffed by Summer Undergraduate Research Experience program students, graduate students, faculty and staff. They focused on teaching youngsters about nanoscale phenomena, including ferrofluid behavior, size and scale, and exploring special tools.

"Kids' Day gave me hands-on experience explaining complex ideas to children," said Kailey Imlay, WVNano SURE participant.

The WVNano Kids' Day program was one of more than a dozen summer STEM programs and camps coordinated by WVU.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IES are not just for college students
e over the summer with future learners

"I'm glad I came across this because I think I found something else I'd like to do with my life."

SUMMER UNDERGRADUATE RESEARCH EXPERIENCES

WVU's Summer Undergraduate Research programs

culminated in late July with a symposium featuring a poster presentation by 89 students from six STEM summer programs. Eight-to-ten week competitive programs at WVNano gave undergrads from Appalachia the opportunity to conduct research in faculty laboratories. The programs included Research Experiences for Undergraduates (REU) and Summer Undergraduate Research Experience (SURE).

Other STEM related undergraduate experiences included International Research Experiences for Students (IRES), a Biology REU, a Center for Neuroscience Summer Undergraduate Research Internships (SURI) and a SURE program by the Honors Program.

Poster winners in each of the four categories were, from left, Biological & Health Sciences, Sripadh B. Sharma, WVNano SURE participant; Agricultural & Environmental Sciences, Sarah Robinson, Biology REU participant; Physical Sciences & Engineering, Kathryn L. Smith, WVNano REU participant; and Nanosciences, Jonathan A. Yancey, WVNano SURE participant.

Marshall's summer programs

Intensive nine- and 10-week programs allowed more than 40 undergraduate students from 17 institutions to gain hands-on experience with graduate-level research in the labs of some of Marshall's top scientists, mathematicians and engineers.

Marshall's summer programs included:

- Biomedical Sciences Summer Research Internship for Minority Students (SRIMS)
- Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences
- Research Experience for Undergraduates (REU) sponsored by the National Science Foundation
- Summer Undergraduate Research Experience (SURE)
- West Virginia IDeA Network of Biomedical Research Excellence (WV-INBRE).

Pictured from top to bottom; WV-INBRE's Ben Kordusky, SRIMS' Amber Mills , WV-INBRE's Hannah Cavendar

"Our summer programs provide important training and education that help make students highly competitive in math, science and engineering research."

Dr. Charles Somerville, dean of Marshall's College of Science.

Four WVU female researchers receive the first WiSE Awards

Two faculty researchers and two graduate students received West Virginia University's first Women in Science and Engineering Awards.

The awards support faculty initiatives and student scholarships. The WiSE Giving Circle, developed with WVU's National Science Foundation ADVANCE Institutional Transformation Grant, seeks to encourage and mentor young women pursuing careers in STEM disciplines.

Dr. Micky Holcomb

Dr. Micky Holcomb, assistant professor of physics and Dr. Jennifer Weidhaas, assistant professor of civil engineering will receive $3,750 to pursue their research. Kathleen Burke and Mary Kylee Underwood, both graduate students in the Eberly College of Arts and Sciences, will receive $1,250 to support their work.

Dr. Jennifer Weidhaas

"Through the WiSE program, the philanthropic community has endorsed WVU's commitment to advancing women in the STEM fields," said Provost Michele Wheatly.

Kathleen Burke

"Private/public partnerships like this will be necessary for WVU to achieve the goals of the 2020 Strategic Plan."

Mary Kylee Underwood

WVSU AND WVU STUDY WHETHER 'AGRICULTURAL BYPRODUCTS' MAY TURN INTO AGRICULTURAL TREASURES

They are not exactly trying to turn waste into gold, but researchers at West Virginia State and West Virginia universities are looking for new answers to the age old question of "What do we do with all this … stuff?"

The answers may create useful fertilizers and environmental synergies for two of West Virginia's most important industries: poultry farming and coal extraction.

In eastern West Virginia where poultry farming is big business, the WVU Environmental Research Center is studying using poultry waste as an energy source while also remediating soils and reducing nutrient runoff into the Chesapeake Bay watershed.

At one major poultry farm, a special gasifier burns the poultry-waste as a fuel to heat the farmer's poultry house, and the resulting biochar can be used as fertilizer that returns carbon to the soil instead of releasing it to the atmosphere.

In the southern West Virginia coalfields, WVSU's Dr. Amir Hass is evaluating the use of chicken manure processed through WVSU's bioplex digester project, as well as other biomass byproducts from municipal, agricultural and industrial uses, as soil amendments in agriculture and mine land reclamation. Based at the WVSU's Appalachian Farming Systems Agricultural and Environmental Research Station in Beaver, WV, Hass works closely with MATRIC in South Charleston, Virginia Tech in Blacksburg, VA, and mine operators and landowners.

Preliminary results, Hass says, suggest that use of biochar as an amendment to Appalachian soils will greatly improve soil productivity.

With the potential of helping to regrow vegetation on reclaimed mine lands, sequestering carbon as a soil amendment instead of releasing it to the atmosphere, and reducing agricultural runoff, the studies have the "real possibility of improving environmental conditions on multiple fronts," says Walter Seselka of the WVU Environmental Research Center.

To learn more: **http://erc.davis.wvu.edu**
www.wvstateu.edu/research/soil-remediation

Above – Biologist Harry Godwin and WVSU's Dr. Amir Hass inspect biochar agglomerates.

News & Announcements

Cooperation among researchers vaults WVU onto "best places" list

The interdisciplinary and cooperative nature of West Virginia University's research community was a key factor in the prestigious magazine *The Scientist* selecting WVU as one of the best places to work in academia. WVU's research enterprise clocked in at number 20 on the list of U.S. research sites.

Marshall to partner with UK as part of national research funding project

Marshall University is partnering with the University of Kentucky as part of the National Institutes of Health institutional Clinical and Translational Science Awards (CTSA) program aimed at decreasing the time for laboratory discoveries to benefit patients.

NIH awarded $20 million to support research at UK's Center for Clinical and Translational Science, making it part of a select national biomedical research network. Marshall will be awarded a subcontract of up to $750,000 over the course of the five-year grant.

"CTSA funding of Marshall's partnership with the University of Kentucky will accelerate our efforts in clinical and translational research, and forge new collaborations to solve some of the most pervasive health problems in Appalachia," said Dr. John M. Maher, MU vice president for research.

MU's Fet receives Fulbright Award

Dr. Victor Fet, a professor of biological sciences at Marshall, has been awarded a Fulbright Scholar grant to lecture and conduct research at the University of Athens and University of Crete, Greece, during the 2011-12 academic year. Fet will perform research and lecture in evolution and biogeography. In collaboration with Greek biology researchers, teachers and students, he will collect data and analyze biodiversity, biogeography and evolutionary formation of Greek fauna.

Marshall scientist presents breast cancer research

Dr. Philippe T. Georgel, a professor of biological sciences and director of the Cell Differentiation and Development Center at Marshall University, presented his research about the effects of diet on breast cancer at the Era of Hope 2011 Conference in Orlando, Fla.

The conference provides a forum for scientists and clinicians to learn about advances made by the U.S. Department of Defense Breast Cancer Research Program awardees.

Georgel's research project, in collaboration with Dr. Elaine Hardman, investigates the ability of a maternal diet rich in omega 3 fatty acids—like that found in fish oil and canola oil—to reduce the incidence of breast cancer and limit growth of malignant mammary tumors in female offspring.

WVU research funding tops $174 million for second consecutive year

West Virginia University received a near-record $174 million in sponsored research funding in the most recent fiscal year. The two-year average of $176 million represents a 35 percent improvement over the $130 million average during the previous 10 fiscal years.

"WVU is a significant player in the national competition for research and innovation grants and contracts," said WVU President Jim Clements, noting that research and innovation are key drivers in the WVU 2020 Strategic Plan.

The funding comes from private and government sources, including the National Science Foundation, National Institutes of Health, Department of Agriculture, Department of Defense, NASA and others.

$174 MILLION
IN SPONSORED RESEARCH FUNDING

Professor presents oral cancer research at international conference

Marshall University faculty member Dr. Pier Paolo Claudio recently travelled to Italy where he gave two presentations at the International Congress of the Italian Society of Pathology and Oral Medicine. Claudio is an associate professor in the cancer biology research cluster and directs a laboratory in the new Translational Genomic Research Institute at the Edwards Comprehensive Cancer Center. His presentations, "Cancer stem cells and oral cancer" and "Novel therapies in oral squamous cell carcinoma," highlighted a discovery in his lab of how to isolate and propagate cancer stem cells.

Marshall University science educator receives research award

Dr. Derrick Kolling, a chemistry professor at Marshall University, has received a $35,000 Cottrell College Science Award to continue his research on photosynthetic oxygen evolution. The grant funding is part of the spring 2011 awards given by the Research Corporation for Science Advancement (RCSA), which seeks to support early career scientists at primarily undergraduate institutions.

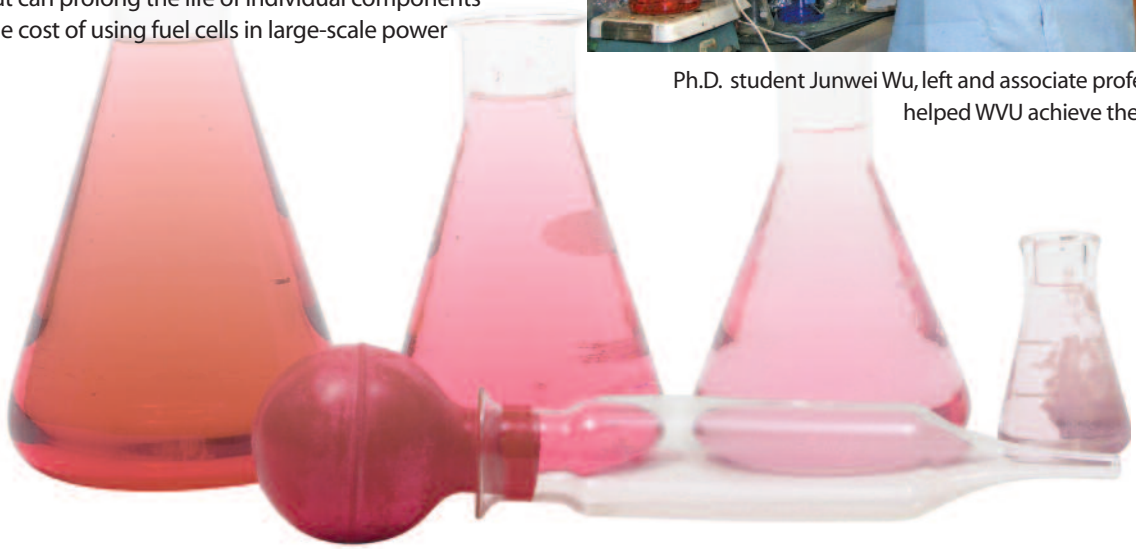
Recent Events

WVU/NETL team receives "Oscar of Innovation" for fuel cell work

Researchers from West Virginia University and the National Energy Technology Laboratory in Morgantown have earned an award known as the "Oscar of Innovation" for their work on a technology that could vastly improve the performance of solid oxide fuel cells as a new source of clean electricity. *R&D Magazine* named the work one of the "100 most technologically significant products introduced into the marketplace over the past year." Previous R&D 100 Award winners include such innovations as HDTV and the automated teller machine.

Fuel cells generate electricity through a chemical reaction. They use hydrogen as fuel and little more than water is produced as a byproduct. NETL and WVU experts are working to develop a coating that can prolong the life of individual components and lower the cost of using fuel cells in large-scale power generation.

Ph.D. student Junwei Wu, left and associate professor Xingbo Liu helped WVU achieve the R&D100 Award.



Tech Team awarded at Energy Center competition

West Virginia University Institute of Technology electrical engineering students Gary Brewster and Prasan Gurung achieved third poster award at the Advanced Energy Center conference in New York. Brewster and Gurung designed and implemented a Residential Grid-Connected Interface Device for renewable energy technologies such as storage and fuel cell devices.

Also competing from WVU Tech were students Robbie Armstrong and Hannah Fisher. The projects were performed at WVU Tech's alternative energy lab within the electrical and computer engineering department. The research efforts are focused on advanced energy technologies under technical supervision of Dr. Kourosh Sedghisigarchi in collaboration with Dr. Asad Davari.

Tech Undergrads selected for TeraGrid'11 Conference

Three WVU Tech electrical and computer engineering department students were selected to attend the TeraGrid '11 Extreme Digital Discovery Conference this summer in Salt Lake City.

Colin Hoylman, Jeffrey Heck and Charles Hedrick were selected for presentation. Their research project poster was one of the 34 student posters accepted. "The conference gave us a chance to learn about the many ways supercomputers are used and meet the people involved with the development of new supercomputing resources," Hoylman said. "It was a valuable experience."

Shepherd team works to institutionalize research on campus

This summer a team from Shepherd University attended a workshop on "Institutionalizing Undergraduate Research for State Systems and Consortia" to promote undergraduate research as part of the culture of an institution and inspire faculty to mentor students and students to seek out research activities.

The event at UNC-Ashville was sponsored by the Council on Undergraduate Research and paid for by a grant from the NSF.

"Having the opportunity to meet with faculty members at other liberal arts universities and discuss best practices and the challenges associated with developing a strong undergraduate research program on campus was priceless," said Colleen Nolan, dean of Shepherd's Natural Sciences and Mathematics School.

WVU engineering students defy gravity in NASA summer program

Ten undergraduate students from WVU's College of Engineering and Mineral Resources ventured to the Johnson Space Center in Houston for NASA's Microgravity University for a shot at designing, flying and evaluating a reduced gravity experiment.

The WVU microgravity research team was among 20 teams selected from universities nationwide. The team tried to simulate gravity in their experiment by using an electromagnetic field.

Nicholas Mariani, Marc Gramlich and Jason Hamilton test their experiment while weightless.

Upcoming Event

SCIENTISTS:
Learn how to better communicate what you do

Researchers in West Virginia are 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 11 at the Erickson Alumni Center in Morgantown.

Check **www.wvresearch.org** for registration information.

COMMENTARY

Back to the future at West Virginia Regional Technology Park

Dr. J. Phillip Halstead
Executive Director and CEO
West Virginia Regional Technology Park Corporation

Beginning in the late 1940s and continuing for more than 50 years, a research park in West Virginia became internationally renowned for the innovation, creativity and technical expertise of its staff. At its peak, the Union Carbide Technical Center in South Charleston housed nearly 3,000 scientists, engineers, researchers and others who patented tens of thousands of processes and inventions, many of which transformed our world by providing some of today's common consumer products.

Now it's back to the future for the new West Virginia Regional Technology Park (WVRTP), where we seek to re-create the thousands of science, technology and research and education jobs and garner international renown in that same location, yet with a new business model, a new owner and a new vision.

I have the honor of being selected as the first ever chief executive of the West Virginia Regional Technology Park Corporation. I accepted this challenge because I believe the Tech Park is truly a signature project for the state of West Virginia.

While I am new to the Mountain State, I am not new to technology-based economic development and meshing the worlds of academia and private industry. My previous work spans the sectors of business, education, government and economic development in organizations similar to the WVRTP.

We have this opportunity thanks to the vision and leadership of former Governor Joe Manchin and a coordinated effort of federal, state, community, educational and business leaders, as well as the generosity of Dow Chemical Company. The West Virginia Legislature and Governor Earl Ray Tomblin established a non-profit corporation governed by a nine-member board to provide strategic direction and I am pleased to begin working with this esteemed group of leaders.

As I begin this exciting challenge, I see progress already. New construction and major renovations are underway. The Kanawha Valley Community & Technical College will begin holding classes next August and the Advanced Technology Center will soon rise to become a gem in the state's Community & Technical College system.

The investment of state and federal dollars will reap great rewards for West Virginia as the Tech Park attracts millions more in private investment and ultimately creates many new private-sector jobs.

This is a place for education, research, technology and commercialization … its own "innovation ecosystem." With a strong board of directors and supportive government representatives, I envision the park to become renowned once again and be considered the world's friendly front door for chemical process engineering and manufacturing.

As the Master Plan for the Park comes together and events are scheduled in the coming months, I welcome your thoughts and participation in shaping our shared future.

Learn more at **www.wvresearch.org/techpark**.

Phil Halstead

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Division of Science and Research
West Virginia Higher Education Policy Commission
1018 Kanawha Blvd E Ste 1101
Charleston WV 25301-2800
304.558.4128 X 7
www.wvresearch.org

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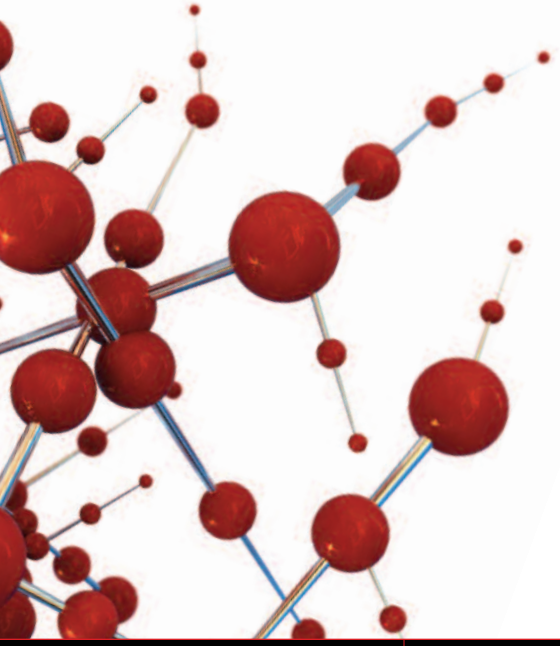

From the Vice Chancellor: NURTURING GROWTH— Investing in the Future

You may notice a common theme in most of the articles in the Summer edition of the *Neuron*. Actually, all of our work in the Division of Science and Research supports the theme of investing in research infrastructure and nurturing talent to develop West Virginia's future. In this age of rapid technological change and global competition, innovative scientists and engineers hold the potential to diversify our regional landscape with new ideas and new career opportunities.

From the cover story of Wheeling Jesuit's Dr. Bryan Raudenbush and his research work with undergraduates, to the high-tech spin out companies promoting West Virginia innovations, to the improved information access through Internet2 and Gig.U, we are making progress in shaping our technological and economic future. Along with the many activities on campuses statewide to encourage future college students to enter STEM fields, there is much going on to improve the future of West Virginia.

But we are not content to stop now. There is still much to do. We also must realize that not every student will excel, not every start up will succeed, not every investment will pay off; which provides all the more reason to invest broadly in our youth, in promising research and potential commercial ventures and keep working to bring greater value for our efforts.

I welcome our new Tech Park Chief Executive Phillip Halstead (see page 15). Dr. Halstead has great credentials and even greater enthusiasm to accelerate the momentum we've already developed with the Regional Technology Park. The strategic alignment of activities from students to faculty to innovation make this an exciting time to be nurturing growth and investing in our future.

Carpe Diem,

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