

RESEARCH TRUST FUND:

*A Good Investment
for West Virginia*





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Purpose

“...Continued expansion of the nation's economy is dependent upon the ability of its institutions of higher education to increase the quality, quantity and productivity of its citizens who are engaged in scientific and technical fields of study. Failure of the United States to compete in these areas may lead to lower standards of living, dependence upon foreign intellectual capital and international insecurity. The economic future of West Virginia is equally dependent upon the ability of Marshall University and West Virginia University, the state's two doctoral-granting, public research universities, to promote, educate and train researchers and research support staff in these diverse fields of study.”

– Senate Bill 287 (2008)



Background

In 2008, the West Virginia Legislature approved a \$50 million one-time appropriation to match private contributions to Marshall University and West Virginia University and endowments supporting science and engineering. The interest gained from the Fund was placed into an account to support science, technology, engineering and mathematics (STEM) research and education at the state's predominately undergraduate institutions and the West Virginia School of Osteopathic Medicine.





Distributions to the State’s Research Universities and Predominately Undergraduate Institutions

As of January 2013, distributions have been awarded in response to targeted fundraising at the state’s research universities:

Marshall University	\$15,000,000
West Virginia University	\$35,000,000

Both institutions have matched the entire amount available in the Trust Fund.

Five predominately undergraduate institutions have been awarded \$100,000 each from the interest fund. As of September 2012, distributions to funds raised are as follows:

Concord University	\$23,500
Fairmont State University	\$26,422
Shepherd University	\$72,189
West Liberty University	\$32,130
West Virginia State University	\$100,000

Investment and Outcomes at Marshall University

The program has had a dramatic effect at Marshall University. To date, \$15 million in private donations has been combined with proceeds from the Trust Fund to create 16 new endowments—for a total benefit to the institution of \$30 million.

So far, these endowments have increased Marshall University’s overall endowment by more than 15 percent, and the funds will continue to support critical, productive and economically beneficial research long into the future.

At Marshall University, these endowments have been directed to three main areas—support for student research, support for research in specific units or departments, and support for research in designated disciplines. The student research endowments support scholarships and stipends for students engaged in both undergraduate and graduate research. The funds designated for specific units or departments are enabling a multidisciplinary approach to economic development through research, innovation and commercialization, including initiatives in intelligent transportation systems and a research institute to generate new business ventures. The funds to support designated disciplines are providing endowed professorships or research support for faculty members in areas as diverse as dementia, river biology, safety engineering, obstetrics and gynecology, and translational sports medicine.

So far, these endowments have increased Marshall University’s overall endowment by more than 15 percent, and the funds will continue to support critical, productive and economically beneficial research long into the future. The program also has helped catalyze public and private support for a number of new research facilities at Marshall University, including an applied engineering complex, translational genomics research institute, sports medicine translational research center, and schools of pharmacy and physical therapy. A complete list of endowments can be found at <http://www.marshall.edu/b4b>.



“The West Virginia Research Trust Fund is arguably the State’s most important initiative in recent memory. The program at Marshall University will enhance the economic vitality of our region and advance knowledge industry career opportunities for citizens for generations to come.”

Dr. Stephen J. Kopp, President, Marshall University

Marshall University RESEARCHER SPOTLIGHT

Finding the answers to a baffling condition that affects millions of Americans is a mission for geriatrics specialist Shirley M. Neitch.

As professor of internal medicine and chief of geriatrics at Marshall University’s Joan C. Edwards School of Medicine, Neitch sees plenty of patients with dementia—a progressive deterioration in reasoning, memory and other mental abilities. Alzheimer’s disease is perhaps the most widely recognized form of the syndrome, which devastates families emotionally and financially.

Funded through an endowed professorship supported by the West Virginia Research Trust Fund, Neitch is leading a research project to investigate the causes, management and treatment of dementia, including a genetics study of a family whose affected members develop symptoms at a very young age—in their late 20s. Her next step will be to pursue treatment options.

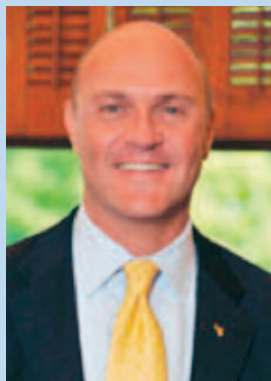
Neitch is the director of the Hanshaw Geriatric Center at Marshall, and has served as president of the West Virginia Geriatrics Society. In 2010, she received the David Z. Morgan Award from the West Virginia Geriatric Education Center for outstanding contributions to geriatrics education. Earlier this year, she was inducted in the Gold Humanism Honor Society and received the Leonard Tow Humanism in Medicine Award.

A fellow of the American College of Physicians, Neitch received her M.D. from the Medical College of Virginia. Her research has been published in a number of publications, including the Journal of the American Geriatrics Society and the American Journal of the Medical Sciences. She is the co-author of “Becoming a Clinician: A Primer for Medical Students.”



GERIATRICS SPECIALIST **SHIRLEY M. NEITCH**





“The Research Trust Fund follows a national call for investment in basic research and innovation. Many of the greatest advances in society have come from university laboratories. Several years ago our state leaders established a national model for research support. Our donors responded with extraordinary generosity and belief in the promise of university research and development at West Virginia University in critical areas important to the state such as cancer research, childhood diabetes, science education, and energy. We have more donations ready to be matched in order to continue growing the investment in WVU’s research infrastructure and brain power in our state.”

Dr. James P. Clements, President, West Virginia University

West Virginia University RESEARCHER SPOTLIGHT

Physicist Diandra Leslie-Pelecky is using matter so much smaller than strands of your hair to usher in new treatments in healthcare.

The West Virginia University professor in the Department of Physics moves magnetic nanoparticles that are 1000th the diameter of a hair as part of her work. It's a lot like the children's toy Woolly Willy that uses a magnet to cluster magnetic fragments over a paper man's face. But Leslie-Pelecky's work has the potential to target chemotherapy to cancerous tumors instead of an entire body thereby lowering the risk of harmful side effects.

Leslie-Pelecky has testified before Congress to support nanotechnology research at a time when the field has such potential in the healthcare industry and electronics. Her work has been supported by the West Virginia Research Trust Fund.

She's presented to technical audiences and the general public, including addresses sponsored by the American Association for the Advancement of Science and the American Physical Society. Her work has been covered by a variety of publications that include the New York Times Science Times, Sports Illustrated, Chemical & Engineering News, and the Materials Research Society Bulletin. She has been heard periodically on the Sirius Speedway satellite radio program to discuss scientific principles related to racecar driving and she is the author of two books, "The Physics of NASCAR" and "Biomedical Applications of Nanotechnology."

With a Ph.D. in condensed matter physics from Michigan State University, Leslie-Pelecky served on the physics faculty at the University of Nebraska-Lincoln for 14 years. Her work has also been supported by the National Science Foundation, including her educational video series on the science of NASCAR.



PHYSICIST **DIANDRA LESLIE-PELECKY**

Investment and Outcomes at West Virginia University

Over the four-year period since the inception of the program, West Virginia University created 86 private endowments. Through the combined support of private donors and the Legislature, West Virginia University has established \$70 million in endowments to support research. These endowments include five types of gifts: 12 chairs and professorships, 14 undergraduate scholarships, 15 graduate fellowships, 43 broad-based research support funds and 2 library endowments. Every year hereafter, the earned interest from these endowments will provide a source of funds to ensure West Virginia University's continued leadership in research and scholarship. The named chairs and professorships provide recognition of academic achievement and thus the opportunity to retain the very best faculty and the potential to recruit outstanding new faculty. Scholarships and fellowships help recruit and retain the highest caliber students to work with our faculty, as well as provide an opportunity for them to engage in research, thereby enhancing their careers. Those endowments that directly support research provide deans with the ability to invest in faculty as they explore new ideas within their disciplines with state-of-the-art infrastructure and equipment. Library endowments build the intellectual resource base for pursuing new knowledge.

The strategic research plan that undergirded the program at West Virginia University also provided a guideline for additional investments and commitments by West Virginia University. At least 25 new faculty positions were created within the four research focal areas. New facilities including a new medical sciences research facility, a new vivarium, a new advanced engineering research building, and a new facility for agriculture have or will be built. These investments in personnel and infrastructure are tangible evidence of West Virginia University's commitment to the program.

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Activities and Investments and Outcomes at Predominately Undergraduate Institutions

“We are very appreciative that the State of West Virginia acknowledges liberal arts institutions like Concord University, and supports our faculty and students who are actively engaged in all areas of scholarship, discovery, application, integration and teaching. The RTF has done an excellent job in affirming and supporting the research culture on our campus by providing the financial means to participate in undergraduate research for our students and faculty.”

Dr. Gregory F. Aloia, President, Concord University

Concord University

Benefits will extend well beyond the five-year award period as undergraduate research activities become entrenched within a group of STEM faculty, and laboratory infrastructure developed while funds continue to be utilized for teaching and research. Fundraising by the institution’s Office of Institutional Advancement has targeted additional donors interested in academic program fundraising beyond the award.

The funding provides direct awards to students as stipends and provides valuable

one-on-one research experience with a Ph.D. scientist, which has effectively become a necessity for admission to top graduate programs in STEM areas. The funding also distributes small seed grants to faculty working with undergraduate students at the institution. It has stimulated the submission of several external grants to date, including one to the National Science Foundation (NSF), which is currently under review. Faculty-student subgrants encourage collaboration on campus and with scientists at other university and federal laboratories, which is necessary in today’s highly collaborative and multidisciplinary STEM research environment.

Fairmont State University

The grant supports the New Media Assessment Project, an effort to capture large amounts of national security-related content from new media applications such as Twitter, social networking sites and discussion boards; parse and database that content into a networked storage system; and apply a variety of search, visualization, and automated warning tools to the content in order to generate new knowledge about national security and law enforcement threats. This program is part of the Open Source Intelligence Exchange (OSIX), which is the laboratory and applied research component

of Fairmont State University’s National Security and Intelligence (NSI) Program. OSIX Student Analysts gain valuable hands-on experience as they work on real intelligence products for real consumers, while receiving course credit. The Research Trust Fund is being utilized to fund IT improvements and provide travel stipends to participating students.

“Through the Open Source Intelligence Exchange (OSIX), National Security and Intelligence students have the opportunity to learn from experts and to conduct real-life, hands-on intelligence work. The New Media Assessment Project benefits Fairmont State University and its students, the State of West Virginia and the nation. The only one of its kind in the state, this program provides opportunities for students to achieve their professional and personal goals and discover roles for responsible citizenship that promote the common good.”

Dr. Maria C. Rose, President, Fairmont State University

Shepherd University

Shepherd University received a \$100,000 Research Trust Fund grant from the West Virginia Higher Education Policy Commission (EPSCoR program) for a three-year project titled, Undergraduate Research and Experiments in Robotics-Based Accomplishments for STEM (URERAS). The overall goal of the project is to use the creativity of the science of robotics to encourage more students to pursue and graduate with a STEM career. The URERAS project is designed to positively impact the number of STEM graduates by increasing recruitment and retention efforts at Shepherd University.

"Shepherd has enthusiastically played a part in expanding the pipeline to research careers through the support of the Research Trust Fund. By stimulating interest in an exciting field like robotics, Shepherd University professors and students ignited the curiosity and shaped the abilities of K-12 students. Those students are now better positioned to select careers in research, thereby enhancing the State's scientific and technical capacity."

Dr. Suzanne Shipley, President, Shepherd University

The Co-Principal Investigators (Co-PIs) also conducted 14 outreach activities in local K-12 schools to introduce students to the fun of robotics and STEM learning. The Co-PIs and approximately 10 Shepherd University students participated in five different robotics competitions, including an international event in California in 2012, and won numerous medals.

West Liberty University

Funds raised specifically for this program, as well as matching monies from the Research Trust Fund, will be utilized in one of two key components: Stipend Support for Students and High-end Instrumentation. Both aspects will complete and extend the institution's vision of continual support and growth of biology and biological research, its STEM "area of distinction."

"West Liberty is ready to not only face the challenges of the future, but to excel and succeed. We welcome the support of the Research Trust Fund, which is much needed at the undergraduate level. Many of our students are high achievers and these awards offer them the chance to do specialized work in the sciences that will translate into career success. It is an excellent investment for West Virginia."

Mr. Robin C. Capehart, President, West Liberty University

This year, the University provided the first undergraduate research stipends to two young women, both Bucks for Brains Fellows. Senior Raquel Fagundo is using her grant to study ecological evolution allowing her to participate in the first step in determining a new species molecularly. Senior Leah Starkey will be working at the Schiffler Cancer Center in Wheeling

thanks to her fellowship. As a chemistry/ biology major, she knows this opportunity is invaluable since she plans on becoming a medical doctor.

West Liberty has raised an additional \$25,000 in private donations that will be submitted for match.





West Virginia State University

The Research Trust Fund grant which was generously matched by The Dow Corporation, has made a significant impact on West Virginia State University students and faculty, as well as local technology partners and sister institutions. The \$100,000 grant and matching funds have allowed the institution to install what is arguably the most advanced piece of new chemistry research equipment in the Kanawha Valley, a 400 MHz Nuclear Magnetic Resonance Spectrometer (NMR). Students and faculty are using the instrument to advance their capabilities to run chemical analyses and perform spectra interpretations for laboratory reports—enhancing University research initiatives and creating highly-competitive STEM graduates for the Kanawha Valley and beyond.

“This grant has taken STEM academics and chemical research to new levels for our students, our faculty and our research partners. It’s through these generous HEPC funding opportunities that West Virginia State University will truly advance its student-centered research programs and its contributions to the economic and technological infrastructure of our state.”

Dr. Brian O. Hemphill
President, West Virginia State University

Collaborative initiatives and access to the NMR are under discussion with both West Virginia research universities, as well as The Dow Corporation, MATRIC, Bayer, and both the Chemical and Polymer Alliance Zones, in an effort to spur public-private partnerships that will enhance the economic growth of the industry across the state. The NMR partnership will allow some of these companies to analyze samples

locally, rather than sending them to more expensive off-site facilities, thus promoting economic and technological development in the local region.





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West Virginia Higher Education Policy Commission and
Science and Research Division

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