

WVU Health News

News Releases



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Two at WVU earn NIH Challenge Grants

Nanomaterials' health impact, psychiatric drugs are targets of research

MORGANTOWN, W.Va. – Two biomedical researchers at West Virginia University have won competitive grants from the National Institutes of Health (NIH) under the new Challenge Grant program.

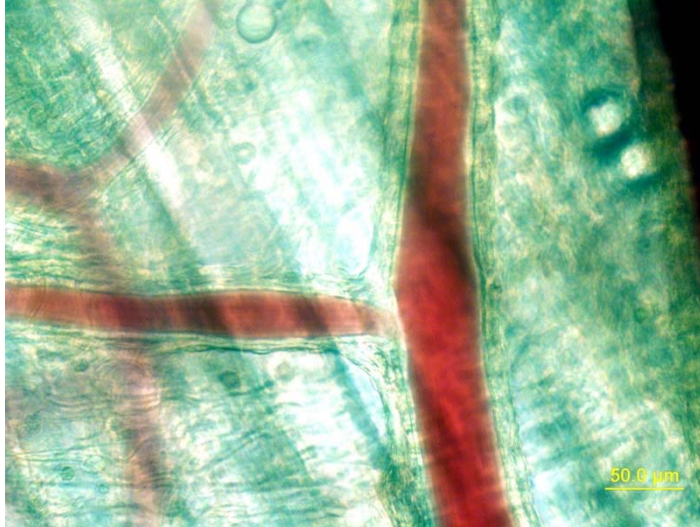
Timothy Nurkiewicz, Ph.D., will study the effects of nanoparticle inhalation on the tiny blood vessels that are the site of origin of many cardiovascular diseases. James O'Donnell, Ph.D., will lead a team of scientists at three universities working to identify a new biological target for drugs that treat depression and anxiety.

As part of the Recovery Act, NIH created the Challenge Grants in Health and Science Research to fund high-impact projects across the country in biomedical and behavioral research or public health. The program is competitive: some 20,000 scientists and research teams across the country submitted applications, with fewer than 800 selected for funding.

The two grants will bring almost \$2 million in funding to WVU's Robert C. Byrd Health Sciences Center. Each project is funded for two years.

Little is known about the health effects of nanomaterials, which have been widely adopted and are present in thousands of consumer and industrial products. Their use includes fuel additives, clothing, paint, computer components and cosmetics. (A nanometer is one billionth of a meter, and the nanoparticles he studies are all less than 100 nanometers in diameter.)

"The potential benefits of nanotechnology are limitless," said Nurkiewicz, a member of WVU's Center for Cardiovascular and Respiratory Sciences. "But if we are to realize these benefits, we must first identify the health effects of exposure to such nanomaterials."

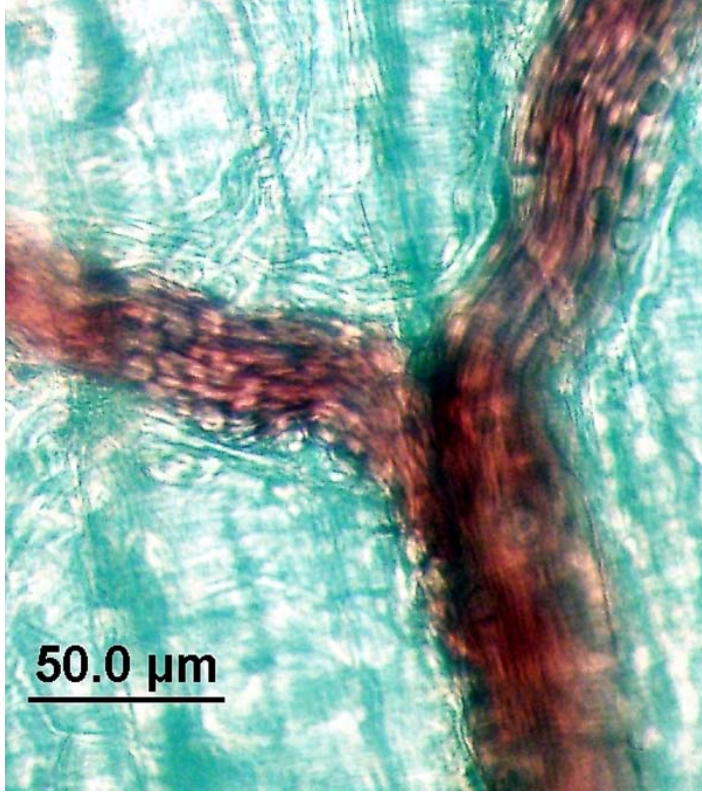


Damage to these vessels impairs the body's ability to regulate the delivery of oxygen to the body's cells and removal of carbon dioxide. The vessels' poor functioning is implicated in a number of serious diseases including high blood pressure, cardiovascular disease and diabetes.

O'Donnell – collaborating with Chang-Guo Zhan at the University of Kentucky, Wei Wang at the University of New Mexico and Han-Ting Zhang at WVU – is investigating whether the enzyme phosphodiesterase-2 (PDE2), found in brain cells, could be regulated by new drugs to control anxiety, depression and other psychiatric disorders.

Few drugs currently available target this enzyme, so the research team will use computational modeling to design and synthesize molecules that could form the basis for new medications.

Nurkiewicz's project, "Microvascular Health and Nanoparticle Exposure," received a \$1 million award from the National Institute of Environmental Health Sciences. O'Donnell's project, "Phosphodiesterase-2 and Mood Disorders: Target Validation and Drug Discovery," was awarded \$950,000 by the National Institute of Mental Health.



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For More Information:

Amy Johns, HSC News Service, 304-293-7087

johnsa@wvuh.com

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