U.S. National Science Foundation

WEST VIRGINIA

● FY 2023 Fast Facts

$24,077,000
Total NSF Awards to West Virginia

$21,808,000
Invested in Fundamental Research in West Virginia

$2,269,000
Invested in STEM Education in West Virginia

$550,000
Invested in West Virginia Businesses

● Top NSF-funded Academic Institutions for FY 2023

West Virginia University
$16,066,000

Shepherd University
$637,000

Marshall University
$518,000

● NSF By The Numbers

The U. S. National Science Foundation (NSF) is an $9.06 billion independent federal agency created by Congress in 1950 to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense. NSF's vital role is to support basic research and researchers who create knowledge that transforms the future.

DID YOU KNOW? NSF has funded the work of **261** Nobel Prize winners over 75 years.

$9.06B
FY 2024 Total Enacted

93% Funds research, education and related activities

11K Awards

1.9K Institutions

353K People

Data represents FY 2023 Actuals unless otherwise indicated

Expanding the Frontiers of Science

Two-photon imaging uses intense laser pulses to excite fluorescent proteins within living tissues and is widespread in the biological sciences for functional imaging of time-varying processes. The two-photon absorption process has increased spatial resolution compared to one-photon absorption. Still, it is less efficient and thus requires high light intensity to increase the likelihood that two photons will arrive at the target simultaneously. Through the NSF Established Program to Stimulate Competitive Research and Quantum Sensing Challenges program funding mechanisms, a research project at **West Virginia University (WVU)** is working to produce excitation light sources with quantum entanglement between photons to increase the likelihood of two photons arriving simultaneously, thus making two-photon absorption and imaging more efficient. Improved efficiency will enable lower laser intensities, which will reduce tissue damage and enable longer and more frequent measurements. Existing two-photon imaging facilities at WVU are being upgraded with quantum-entangled light sources. Postdoctoral, graduate and undergraduate researchers are being trained in an interdisciplinary laboratory setting combining physics, biology and neuroscience, and teaching modules are being devised to raise quantum awareness in a quantum summer school for undergraduates.

STEM Education and Broadening Participation

Research demonstrates that students' early experiences with science, technology, engineering and mathematics coursework play a pivotal role in their decision to persist in STEM. In engineering, many students express initial interest but experience challenges with problem-solving skills that are key to the discipline. Students beginning at the college algebra, trigonometry or pre-calculus level (non-calculus-ready students) may benefit from support that helps employ effective strategies for problem-solving. Supporting these students' success and persistence in STEM is significant given the continued national need for more STEM professionals. Through The NSF Improving Undergraduate STEM Education program, a project at **West Virginia University** is testing interventions to help promote problem-solving knowledge and skills among non-calculus-ready students, a disproportionate number of which students are from underrepresented, first-generation and economically disadvantaged groups. The outcomes of this project will guide the design of intervention materials to promote students' conceptual knowledge and strategic learning, providing replicable tools to enhance STEM education and retention more broadly.

Regional Innovation Engines

NSF Regional Innovation Engines (NSF Engines) Development Awards help organizations create connections and develop their local innovation ecosystem within two years to prepare a strong proposal for becoming a future NSF Engine. The program seeks regional teams rooted within industry, academia, government, nonprofits, civil society and communities of practice to catalyze and foster innovation ecosystems across the U.S. which will advance critical technologies, address national and societal challenges, promote economic growth and job creation, spur sustainable regional innovation and nurture diverse talent.

To stay in the loop about future funding calls and opportunities to engage, sign up for the NSF Engines newsletter.

EPSCoR

COMPETITIVE RESEARCH | West Virginia is one of 28 U.S. states or territories under the NSF Established Program to Stimulate Competitive Research (EPSCoR). **$8,786,225** in awards have been made to West Virginia academic institutions through EPSCoR in FY 2023. For more information, visit West Virginia's EPSCoR state web page.

NCSES

According to the NSF National Center for Science and Engineering Statistics (NCSES), which is housed in NSF, 32% of science, engineering and health doctorates conferred in West Virginia are made in life sciences. Visit West Virginia's science and engineering state profile to learn more!

26.51% of **West Virginia's** higher education degrees are concentrated in S&E fields.

3.55% of **West Virginia's** workforce is employed in S&E occupations.

3.82% of **West Virginia's** total employment is attributable to knowledge - and technology - intensive industries.

Learn More

CHIPS & SCIENCE – The CHIPS and Science Act's investments in the U.S. National Science Foundation will help the United States remain a global leader in innovation. Implementation of this legislation will be key to ensuring that ideas, talent and prosperity are unleashed across all corners of the nation. For more information, please visit the NSF CHIPS and Science website.

RESEARCH SECURITY – NSF is committed to safeguarding the integrity and security of science and engineering while also keeping fundamental research open and collaborative. NSF seeks to address an age of new threats and challenges through close work with our partners in academia, law enforcement, intelligence and other federal agencies. By fostering transparency, disclosure and other practices that reflect the values of research integrity, NSF is helping to lead the way in ensuring taxpayer-funded research remains secure. To learn more, please visit the NSF Research Security website.

CONNECT WITH NSF – For more information on NSF's impact in your state, please contact the NSF Office of Legislative and Public Affairs at congressionalteam@nsf.gov.