



Joseph E. Kerschner, MD

## The Importance of NIH Funding to Spur Biomedical Research

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The National Institutes of Health (NIH) has just released its annual research funding data, which demonstrates that research is a critical economic driver in the state of Wisconsin. During the federal government's fiscal 2015, the NIH funded research projects in the state totaling \$407.4 million. As importantly, each NIH dollar invested in Wisconsin generated approximately \$2.21 in new state business activity, and each new research grant awarded resulted in 7 new jobs.<sup>1</sup>

Also in fiscal 2015, Medical College of Wisconsin (MCW) funding from the NIH increased to \$87 million—continuing the institution's position as one of the leading research-intensive medical schools in the United States. In fact, MCW's was the 12th-largest percentage increase in funding of the top 50 medical schools in the country.

The impact of research funding on the Wisconsin economy underscores why the new federal spending bill, passed by Congress in mid-December, is a critical victory—not only for biomedical research but everyone in the state. The bill includes an annual funding increase of \$2 billion for the NIH (from \$30

to \$32 billion), the first increase in more than 12 years of either flat funding or repeated cuts to the overall NIH budget, during which time it

find bipartisan support for the country's most critical initiatives, with members of both parties agreeing that increased biomedical research

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lost more than 25% of its purchasing power. This growth in funding is critical for the United States to keep pace with other developed countries in biomedical research.

Since 1962, federal funding for research and development (R&D) as a share of gross domestic product (GDP) has declined from 2.2% to less than 0.5%,<sup>2</sup> placing the United States in 10th position by national R&D investment as a percentage of GDP among member-nations of the Organisation for Economic Co-operation and Development (OECD).<sup>3</sup> Still, at an annual appropriation of \$32 billion, the NIH is the largest funder of biomedical research in the world.<sup>4</sup>

The increased funding for NIH demonstrates that our political system still is able to

is a national imperative and money spent on research now will significantly reduce the cost of health care in the future.

The federal spending bill also earmarked a \$350 million increase for research on Alzheimer's disease, \$200 million to the Precision Medicine Initiative, \$303 million for combating antibiotic-resistance bacteria, \$91 million towards programs to reduce opioid abuse, and \$85 million in additional funding for the BRAIN Initiative—all of which are areas of substantial expertise at MCW. In fact, these national priorities will dovetail with many laboratories at MCW, including the following:

- Jeffrey Binder, MD, professor of neurology, and his colleagues, who are working on

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Doctor Kerschner is Dean, School of Medicine and Executive Vice President, Medical College of Wisconsin.

NIH-funded brain-related initiatives including developing new tools to improve the diagnosis and management of conditions such as epilepsy, developing functional magnetic resonance imaging (fMRI) methods for epilepsy surgery, and leading a study to ascertain why some patients with epilepsy develop memory disorders and other cognitive difficulties after surgery.

- Piero Antuono, MD, professor of neurology, pharmacology and toxicology, and director of MCW's Dementia Research Center, which is co-conducting a clinical trial for a drug to potentially treat Alzheimer's disease—an area which historically has been underfunded by the NIH. His lab also is interested in developing a resting state fMRI in aging and dementia—in particular the development of a clinically useful tool that can help in assessing different types of dementia and in subjects at risk for dementia.
- The lab of Shi-Jiang Li, PhD, professor of biophysics and director of MCW's Center for Imaging Research, which focuses on improving and developing advanced MRI acquisition and data analysis techniques to measure brain function and structural network organizations—which are used to understand Alzheimer's disease, drugs of abuse, and sedation.
- MCW's Pancreatic Cancer Program, which is undertaking an inventive phase II clinical

trial to analyze the genetic profile of tumors in an effort to determine the most effective chemotherapy treatment for individual patients. This unique precision medicine trial is the first of its kind for operable pancreatic cancer, which has implications close to home—as Milwaukee's incidence rate of pancreatic cancer is 8 times greater than the rest of the country.

In addition to the NIH funding noted above, NIH dollars broadly support Clinical and Translational Science Institutes throughout the country—including a recent 5-year, \$22 million Clinical and Translational Science grant received at MCW to fund the work of the Clinical and Translational Science Institute of Southeastern Wisconsin (CTSI). Using innovative mechanisms, CTSI members work to translate research discoveries more quickly into preventive, diagnostic, and therapeutic interventions for patients. Consortium members share resources, technology, knowledge, and expertise to work towards those goals. The CTSI research portfolio includes more than 185 studies, with more than 47 collaborative research studies underway. The collaborations and partnerships fostered through the CTSI already have paid off in innovation and translation of new technologies and advancements.

Recently, MCW hosted Claire Pomeroy, MD, MBA, president and chief executive officer of the Albert and Mary Lasker Foundation, who

spoke on Medical Schools and Academic Health Centers: A New Outlook Toward Maintaining and Growing Their Research Portfolios. Dr Pomeroy discussed the current state of funding for biomedical research in the United States and how medical schools can thrive in today's research environment—which includes being open to innovative new partnerships, mentoring the next generation of scientists, and engaging with the public to increase support for research. All of these are important focus areas for MCW.

MCW and its faculty and staff are committed to helping build a brighter and healthier future for all Wisconsin residents. Developing and attracting faculty and staff who successfully build research programs to bring cutting-edge innovation to our citizens is a critical part of that process. Increased funding for this endeavor will be a crucial step to ensuring long-term success.

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## REFERENCES

1. Sources: Research America; Coalition for Life Sciences
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3. Source: National Science Foundation, Science and Engineering Indicators 2014
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