

Written Testimony for the Record
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Research
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Subcommittee on Labor, Health and Human Services, Education and Related Agencies
House Appropriations Committee
In Support of FY2025 Appropriations for the National Institutes of Health

Chair Aderholt and members of the Subcommittee, I am Ruth Carlos, MD, MS, President of the Academy for Radiology & Biomedical Imaging Research (Academy), and a Professor of Radiology and Assistant Chair for Clinical Research at the University of Michigan. The Academy is comprised of more than 200 academic research departments, patient advocacy groups, industry partners, and imaging societies. It represents thousands of radiologists and researchers in all 50 states. We are the only advocacy organization representing the broad imaging research community by collectively advocating for robust and consistent federal research funding.¹ It is my pleasure to submit this testimony on behalf of the Academy. **We strongly support at least \$51.303 billion for the National Institutes of Health's base appropriation.** This figure represents an increase of \$3.222 billion over FY2024. The Academy also supports a proportional increase in funding, approximately 9%—equating to meaningful growth above the Biomedical Research and Development Price Index—for the Institutes and Centers within NIH. Twenty-four of the 27 Institutes and Centers support imaging-based research on a broad spectrum of biomedical systems, and the Academy champions similar proportional increases to advance these efforts agency-wide. Finally, **with the continued development of the Advanced Research Projects Agency for Health (ARPA-H) the Academy supports maintaining a separate appropriation of \$1.5 billion in FY2025** for this exciting and groundbreaking agency. The Academy is supportive of ARPA-H, but believes its appropriations should be separate from NIH's advancement of basic science. There is room for both approaches, and ARPA-H should supplement NIH's basic research mission.

Moreover, Congress must work to ensure federal appropriations are enacted on time to avoid disruptive interruptions to the research process. As the past year has shown, uncertainty and interruptions to scientific research slows our understanding of countless diseases that impact patients daily and dissuades young investigators from careers in medical research. Through consistent, robust funding for NIH and our national research infrastructure, we can continue to make advancements that will improve the lives of patients, families, and caregivers. The Academy is extremely grateful for the past eight years of increased support of NIH and encourages you to prioritize NIH for consistent and dependable funding levels for biomedical research, radiology, and imaging science.

Imaging Research Serves the Most Vulnerable in Our Communities

In my own research, I study how patient outcomes are affected by cost and accessibility. As new research in diagnostic imaging results in smaller, more portable, and more precise technology, underserved populations will benefit. Whether these population centers are in rural areas, where infrastructure and resources are lacking, or in urban centers, where access to brick-and-mortar health centers can be similarly difficult, improving diagnostic technology and taking

¹ <https://www.acadrad.org/about-the-academy/>

it to the patient improves health outcomes. Research at NIH, and in particular at institutes like NIBIB will result in technological advances that will benefit those who need it most. Today, we can screen for breast and lung cancer using mobile platforms to reach patients where they are, including federally qualified health clinics (FQHCs) that may not have access to imaging technology or as part of a community health fair delivering multi-modality health screening. These partnerships reduce patient burden and encourage the use of life saving technologies in populations who would not have received screening or treatment as efficiently 10 or 15 years ago. While our diagnostic tools and technologies are good, we have learned there is room for dramatic improvements that lower health care costs and increase access to potentially life-saving tools. We can provide people with diagnosis and treatment in ways that are less disruptive to their lives. The cascading benefits of less onerous medical care—in the form of lower costs, more time at home, or improved quality of life—are obvious. Continued investment in our technological foundation and improving the available tools will undoubtedly lead to better patient outcomes.

There are other examples of innovative imaging research supported by NIH. Such as:

Using Artificial Intelligence = Improved Cancer Diagnosis & Predicting Hospital Needs

Researchers at the Mayo Clinic, supported by grant funding from the National Cancer Institute and National Institute of Biomedical Imaging and Bioengineering are combining high-definition ultrasound imaging with artificial intelligence to accurately diagnose thyroid cancer.² Affecting over 40,000 new patients every year, accurate and efficient diagnosis results in earlier use of therapeutics for the patient. Using HD imaging to map the fine sets of blood vessels called “microvasculature”, combined with AI evaluation of the results, doctors may be better able to see nodules and distinguish between malignant and benign tumors in places not easily examined. This non-invasive approach reduces the need for biopsies and other surgical interventions that may be proven unnecessary by traditional screening methods. In addition to thyroid cancer, this approach is also showing promise in evaluating breast cancer.

In a different way, artificial intelligence can be used to predict the needs and patient loads of hospitals during extreme weather events. Such extreme weather can impact critical infrastructure such as hospitals, and more specifically imaging resources at a time when adverse impacts on people increase.³ By cross-collaborating on these predictive models, providers can be better prepared to serve patients with fewer interruptions.

Imaging the Brain to Find the Substance Abuse Circuit

Traditionally, when evaluating brain data to determine the impacts of substance abuse, research focuses on one drug at a time. However, addiction and impacts from drug abuse may be related to similar areas of the brain regardless of the chemical. Researchers funded by a cross-institute effort from National Institute on Aging, National Institute of Mental Health, National Institute of Neurological Disorders and Stroke, the National Center for Advancing Translational Sciences, and National Heart, Lung, and Blood Institute among others are investigating the

² <https://www.nibib.nih.gov/news-events/newsroom/how-combination-advanced-ultrasound-and-ai-could-upgrade-cancer-diagnostics>.

³ https://www.niehs.nih.gov/research/programs/climatechange/health_impacts/weather_related_morbidity.

commonalities of brain impact across different drugs of abuse.⁴ Data from 144 different brain imaging studies across more than 9,000 individuals were reviewed using different criteria. In one iteration, researchers determined that 91% of brain atrophy associated with alcohol, nicotine, cocaine, opioids, and marijuana mapped to common areas of the brain. In a second look, 80% of abnormalities mapped to a common area regardless of substance of abuse. In both, the common brain network was the same area. Ultimately this imaging study suggests there is a common brain circuit associated with addiction, which could result in more targeted and efficient treatment for patients without as much regard to the specific source of addiction. In this way, addiction as a condition, and not the individual drug, may be treated more effectively.

Creating Flexible Monitors to See Electrical Signals in the Heart

Researchers at Cornell University are progressing to a new technology that, while not exactly a “wearable diagnostic,” could make it easier to monitor the heart for conditions like atrial fibrillation.⁵ “A-fib” affects over 3 million people annually in the United States and, if left untreated, can result in stroke or heart failure. Traditional treatments have included medications or surgical interventions including cardiac mapping. Now, with support from the National Heart, Lung, and Blood Institute, researchers are developing flexible “basket catheters” that can fully envelope the heart to better see the arrhythmia through electrical connections. This improved technology results in better images of the heart and avoids the rigidity of existing tools that can result in imperfect results. These flexible options are more customizable to individual patients and the structural differences found across hearts. While still being perfected, this approach could result in better imaging and diagnosis of heart conditions for those most in need-ultimately resulting in more effective therapies and improved patient outcomes.

Summary and Conclusion

Sustained and robust NIH funding is crucial to advancing our efforts to understand and treat a myriad of diseases and disorders. NIH has received longstanding, bipartisan support that led to dependable budgets that fund lifesaving research. NIH research reaches every state in the country, with both health and economic benefits. In FY2023, NIH funds generated \$2.46 in economic activity for every \$1 of funded research.⁶ Funding NIH’s base with at least \$51.303 billion will provide the robust support needed to sustain growth and secure advancements in biomedical research. Additionally, keeping NIH funding separated from the exciting efforts underway at ARPA-H will ensure we can take advantage of multiple pathways to achieve success.

While there are many priorities facing our country today, reversing the trend on NIH funding will only delay the discovery of new cures, treatments, and diagnostic technologies that benefit all Americans. I urge you to continue this Committee’s longstanding and substantive support for NIH. Thank you for your strong, continued support of NIH, NIBIB, and all the Institutes and Centers working to advance our biomedical research efforts and to improve the lives of patients worldwide.

⁴ <https://www.nia.nih.gov/news/scientists-find-common-brain-network-substance-use-disorders>.

⁵ <https://www.nhlbi.nih.gov/news/2023/stretchable-electronics-map-inside-heart-its-not-movie>.

⁶ <https://www.unitedformedicalresearch.org/wp-content/uploads/2024/03/UMR-NIHs-Role-in-Sustaining-the-US-Economy-2024-Update.pdf>.