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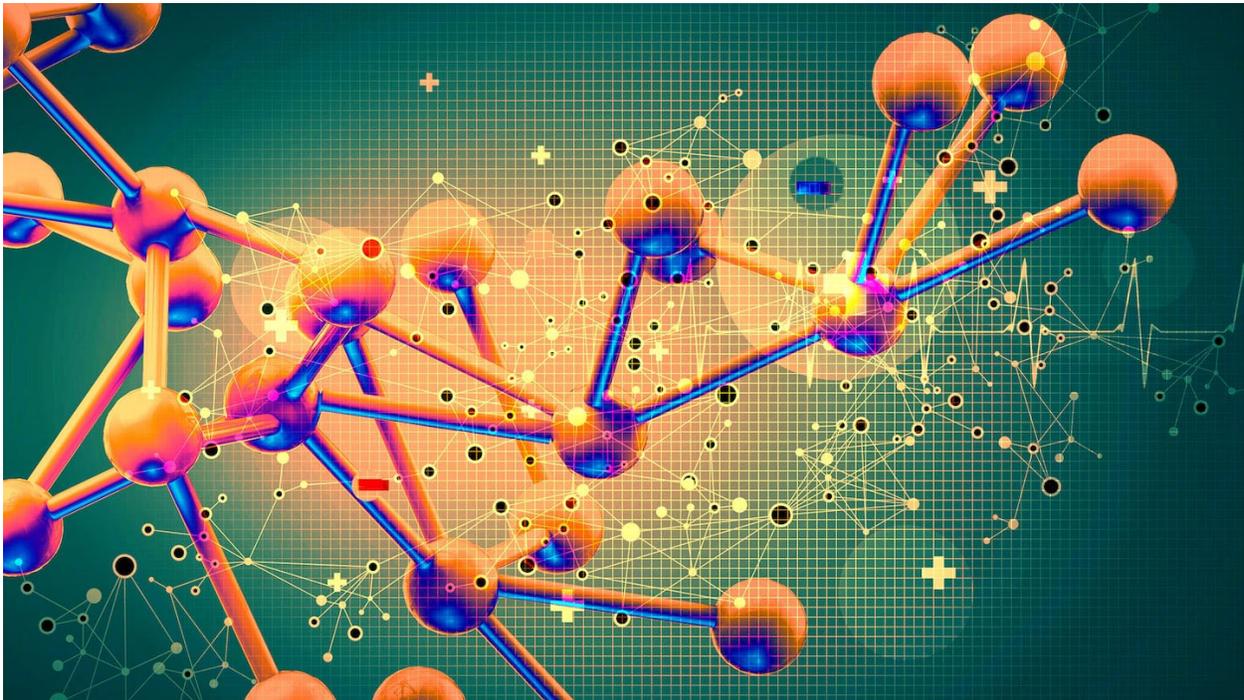
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OPINION

NIH needs reforms, but use a scalpel, not a hatchet

Reforms should be grounded in evidence rather than tradition, avoiding the influence of special interests or political considerations.

By Jeffrey S. Flier and Pierre Azoulay Updated March 4, 2025, 9 minutes ago



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The National Institutes of Health is a beacon of scientific and medical progress, having nurtured nearly every US Nobel laureate in medicine and [enabled critical breakthroughs](#), from basic science-driven therapies to the Framingham Heart Study that transformed cardiovascular care. NIH also built [the biomedical workforce](#) that [underpins academic research](#) and the nation's world-leading biotech startups and pharmaceutical giants.

The available empirical evidence points to a [massive return on investment](#) for the US economy as a whole from federal support for basic R&D, [particularly biomedical research](#), with even conservative estimates implying that any cost savings from scaling back support are [most likely illusory](#).

Given these remarkable accomplishments, the [seemingly random attacks](#) by the Trump administration on the core external funding mechanism employed by NIH threatens to do great harm to the [biomedical research ecosystem](#). It is not too late to reverse course. But it behooves the scientific community to concern itself not just with the level of funding but also the efficiency with which such support is provided. Such concerns should extend far beyond the current [misinformed debates on indirect costs](#), addressing deeper issues with clear thinking and bold leadership.

Weaknesses in NIH's 70-plus-year-old institutional approaches are increasingly evident. One sign is that researchers often secure their first major grants [well into their 40s](#).

This discourages young scientists and contributes to a conservative funding culture that favors predictability over innovation, with many scientists applying for grants to [complete research already largely done](#). This practice, seen as necessary to maintain funding continuity and lab stability, discourages innovation where the risk of failure is high. Ironically, the NIH, with its large and diversified portfolio, [insufficiently encourages, and often actively dissuades, such risky ventures](#).

What reforms might a new NIH director consider as priorities? First, NIH should revamp its approach to peer review. The principle of investigator-initiated research is essential, empowering scientists to pursue innovation through open competitions that eschew top-down dictates. But the evaluation process, a fundamental aspect of rational funding allocation, requires a major overhaul.

More than any specific change, the effectiveness of any peer-review reform would be enhanced by embracing a mindset of systematic experimentation. By employing the rigorous testing framework of randomized controlled trials, NIH could determine the approaches that best foster innovative research — for example, evaluating whether traditional panels generate as many near-term discoveries as [modified lotteries](#) to select proposals that pass an initial quality threshold. This is not about tweaking; it is fundamentally redesigning how we encourage and reward scientific exploration.

Second, the structure of the NIH itself — with its 27 institutes and centers — demands a thorough evaluation. It is unlikely that all these entities are needed; effective science funding would probably be enhanced if some were merged or even phased out. Meanwhile, the NIH might launch new institutes to address emerging fields like bioengineering and broader challenges such as the [reproducibility of scientific research](#). Such changes could increase the efficiency of funding and ensure that NIH's architecture will be capable of meeting tomorrow's greatest scientific challenges.

While NIH allocates most of its funding to nearly [40,000 investigators](#) across the country, it should also consider a major redesign of its historic [intramural research program](#), which consumes [10 to 15 percent of the overall NIH budget](#). Much of the research taking place on NIH's campus in Bethesda, Md. — often described as the largest biomedical research institution on earth — supports laboratories that perform basic and clinical projects that could be conducted in many of the [2,500 research institutions](#) that receive external NIH funding.

Some of these resources could be better allocated toward state-of-the-art tissue banks, advanced computing clusters for big-data analysis, centralized and technically enabled clinical investigation facilities, and ambitious “big science” projects difficult to conduct in a decentralized fashion. If

properly refocused on capital-intensive infrastructure, a revamped intramural research campus could enhance the impact of research conducted across the country.

While reinventing the peer review process, restructuring NIH's institutional architecture, and redesigning the intramural program are priorities, they should be part of a larger strategy of comprehensive reform. Other issues requiring attention include reducing the burdensome administrative costs of grant applications, addressing the [precarious position](#) of young scientists – the seed corn of the biomedical research ecosystem – struggling to fund their laboratories, and, yes, assessing the optimal balance between direct and indirect grant expenditures.

But an effective approach to strengthening NIH requires a delicate balance: between determination and caution. The process must distinguish the many practices that are working well from those requiring rejuvenation, redesign, or even termination. It must avoid the pitfalls of sawbones battlefield surgery – hacking away at vital structures in haste. And it must be recognized that most of the beneficial consequences of reform will not be manifested immediately. Discoveries take years, even decades, [to reveal their full impact](#) on public health, which is the ultimate metric.

Whoever leads reform, the challenge will be to understand the anxieties faced by scientists in the current climate, gain consensus on the most critical reform goals, and then [turn the scientific method on NIH itself](#), wielding a scalpel rather than a hatchet. Reforms should be grounded in evidence rather than tradition, avoiding the influence of special interests or political considerations.

This approach is not a call for retreat or timid incrementalism, too often ways to preserve the status quo. Rather, it is an acknowledgement of NIH's accomplishments and a charge to adapt it to the new realities of 21st-century science. The overarching goal must be to secure and enhance the decades-long role of the United States at the forefront of biomedical research, an outcome that the public both wants and deserves.