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A metareview at the NIH

Science funding in the United States is tight, and the application process is arduous. A recent study of NIH peer-review recommends a major overhaul of the system. Will the changes prove cosmetic or curative?

In June 2007, Elias Zerhouni, Director of the US National Institutes of Health (NIH), called for input from scientific leaders to mend the ailing system of NIH grant peer review. Two working groups collected suggestions from within and outside the NIH, and on February 28 submitted the final draft of the 2007–2008 Peer Review Self-Study. This spring, the NIH will announce the changes to be implemented.

The grant review process is onerous for both applicants and reviewers. According to the report, the success rate of first-time applicants (for A0 grants) is on the order of eight percent. On average, investigators submit a grant three times before securing funding. Reviews can vary dramatically depending on the study section, and funding decisions often seem arbitrary.

From a reviewer's standpoint, applications are long and numerous (about seven per reviewer), and the large time commitment dissuades many of the best-qualified people from participating in a process that lacks uniform review criteria, consistency and, arguably, objectivity.

Recognizing these problems, the report identifies seven main challenges to enhancing NIH peer review: reducing the administrative burden of the review process, improving the rating system, enhancing the quality of the reviewers and their reviews, customizing the allocation of funds for investigators at different career stages, distributing funds on the basis of the distinct needs of different types of science (such as interdisciplinary research), funding research in the context of a limited NIH budget and continually reviewing the NIH to ensure optimal functioning.

To reduce administrative burden, the draft proposes shortening the application from 25 to 15 pages and decreasing the emphasis on preliminary data and detailed methodology. Revised grants that were not funded in an earlier review cycle may now be treated as entirely new submissions, with no requirement of a rebuttal to reviewers' concerns, and no special status accorded to them. To dissuade resubmission of grants that are unlikely to be funded even after revision, a new 'not recommended for resubmission' (NRR) designation is suggested.

For 2008, an all-time high of 80,000 grant proposals are anticipated. The authors of the draft hope that some of the proposed changes will help shrink this number. But will they? Reducing the length of the grant application and the accompanying preliminary data may instead encourage a larger number of submissions per investigator as researchers struggle to secure funding. Moreover, the NRR designation may not dissuade the most persistent applicants, particularly if they perceive an unfair review or prefer to try their luck with a new set of reviewers. If each grant is treated as a new submission, the title is tweaked, and a new number is assigned; there is no disincentive for perpetual resubmission of a grant.

In identifying the challenge of optimizing funding for different career stages, the study recognizes that funding of new investigators must increase. Past initiatives have attempted to raise the number of R01-funded early-career investigators, and yet the draft reports that the level has remained largely unchanged since the 1980s. To rectify the situation, the draft proposes to "continue to fund more R01s for early-career investigators," which the NIH did in 2007 (over 2006 levels) by determining a specific target number of grants for this group of applicants. Yet there were only ten more first-time R01 awardees in 2007 than in 2002. What would constitute a reasonable target for 2008?

To address the issue of a stagnant NIH budget, the draft suggests limiting the number of grants an investigator can hold, or stipulating a 20% time commitment per grant. These changes could free up funds for more (and perhaps younger) investigators. But the NIH is also concerned about how much of the money awarded to an investigator is spent by institutions—to cover salary, for example—and about the increasing reliance on NIH funds to facilitate university expansion projects. Placing limits on grants for salary recovery might change the current culture of university reliance on NIH money as a revenue stream and force the universities to take greater responsibility for their hires.

The NIH system of grant review is in need of an overhaul, and we are encouraged by the study's wide-ranging recommendations. But the problem of too many researchers chasing too few dollars remains. More money won't alleviate administrative burden or improve the quality of reviews, yet Zerhouni has acknowledged that "peer review doesn't need to be as stringently quality-focused when there is a lot of money." So, in an era of limited NIH resources, will the study induce a lasting and beneficial change in the culture of NIH review, or will it provide stop-gap measures until a hoped-for increase in budget occurs?