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Stimulating the Economy through Biomedical Research

I asked ASCB member Jeremy M. Berg, Director of the National Institute of General Medical Sciences (NIGMS), National Institutes of Health (NIH), to write the column below about the American Recovery and Reinvestment Act (ARRA) and its likely impact on the cell biology community. Jeremy graciously agreed, and his communication below lucidly explains the context for ARRA funding, the guidelines that regulate the funding's use, and how the funds will be allocated by NIH. I echo Jeremy, below, in asking fellow ASCB members to share their ideas, to agree to serve as reviewers, and to ensure that we work together to advance scientific research.

—Brigid Hogan

Brigid Hogan

NIH is grateful for the remarkable opportunities afforded by the American Recovery and Reinvestment Act of 2009 to provide economic stimulus to the nation while furthering our mission to uncover new knowledge that will lead to better health for everyone. Understandably, the Recovery Act has created a great deal of excitement in the scientific community and at NIH. While many details remain to be worked out, I appreciate the invitation from ASCB to use this column to clarify as much as I can at this time about the Recovery Act and NIH, as well as related matters regarding the NIH budget.

Budget Context

As background, and since it impacts the use of Recovery Act funds, let me describe the regular appropriations process. On February 4, 2008, President Bush released the "President's Budget" for FY09. This budget reflects the priorities of the administration and is advisory to the Congress, which has the sole authority to appropriate funds. Both the House and Senate worked on developing bills that included appropriations for NIH. However, as has happened before, the process was not completed before the last Congress adjourned.

Thus, NIH and many other agencies had been operating since October 1, 2008, under a "continuing resolution" that provided funds at the same level as in the previous fiscal year. Under a continuing resolution, we are uncertain what the ultimate funding level will be, so we budget conservatively. We award only those new and competing grants that we are sure we would fund under all reasonable scenarios. In addition, this year NIH awarded most noncompeting grants at 90% of their previously committed level, with the intention of restoring most or all of the cuts once the budget uncertainty was resolved (see http://grants.nih.gov/grants/guide/notice-files/NOT-OD-09-002.html).

The Congress that convened in January 2009 took up the FY09 budget process so that the members could then move on to new business, including the budget for FY10. The Congress passed, and the President signed on March 11, a FY09 omnibus appropriations act that included funds for NIH. NIH received a 3.2% increase overall, and NIGMS received a 2.7% increase. With these funding levels, NIH will restore the 10% cuts noted above.

NIGMS will also make a substantial number of new and competing grant awards for applications that scored well, but that we were not able to fund until we were sure of the level of our appropriation. Note that NIGMS does not use a payline, but considers factors in addition to the scientific and technical merit as determined by peer review (see www.nigms.nih.gov/Research/Application/NAGMSCouncilGuidelines.htm). We anticipate that our funding curve (based on the regular appropriation) will be similar to that for FY08 (see Figure 6 in http://publications.nigms.nih.gov/loop/20081125.html#1).

While the regular appropriation was in process, President Obama signed the Recovery Act into law on February 17. Among the primary goals of the Recovery Act are to preserve

and create jobs, promote economic recovery, and provide investments to increase economic efficiency by spurring technological advances in science and health (see www.recovery.gov).

The Recovery Act includes $10.4 billion for NIH in FY09 and FY10. These funds are *in addition to* the regular NIH appropriations for those fiscal years. The Recovery Act funds are to be allocated in the following manner: $1 billion for extramural construction, repairs, and alterations (to be administered by the National Center for Research Resources [NCRR]; see www.ncrr.nih.gov/the_american_recovery_and_reinvestment_act); $0.5 billion for NIH buildings and facilities; $0.3 billion for shared instrumentation and other capital equipment (administered by NCRR); $0.4 billion to support comparative effectiveness research; $0.8 billion to the Office of the NIH Director for programs including the NIH Challenge Grants for Health and Science Research (see http://grants.nih.gov/grants/guide/rfa-files/RFA-OD-09-003.html); and $7.4 billion to the NIH Institutes and Centers (ICs) and the NIH Common Fund, to be divided in proportion to each funding component's percentage of the overall regular NIH budget. For NIGMS, this amounts to $507 million over two years in addition to our regular appropriations.

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Approaching Stimulus Funding

As soon as these broad outlines were clear, I sent a message to NIGMS grantees and recent applicants to provide this information and to solicit input on possible Recovery Act investment strategies (see www.nigms.nih.gov/About/Director/berg_02202009.htm). I am grateful to those who took the time to share their thoughts with me.

The Recovery Act funds distributed to the ICs will be used in three major ways. First, we will consider for funding applications that are already in the system and have been or will soon be peer-reviewed but could not be supported without the additional resources provided by the Recovery Act. Many of these projects are clearly "shovel-ready" (or, more appropriately, "pipette-ready"). The great majority of these awards will be made for two years by the end of this fiscal year (September 30, 2009), and will be predominantly R01s. NIGMS will consider applications from FY08 and FY09 on a case-by-case basis, selecting projects on their ability to provide the short-term economic stimulus that is the primary goal of the Recovery Act and their potential to make significant progress over two years, in addition to our normal considerations. Because the Recovery Act funds are distinct from the base budget of the NIH, we must be very mindful of the impact that these two-year awards will have on the pool of investigators and projects that will compete for funding in FY11. By that time the Recovery Act funds must have been distributed and largely spent.

While we have not determined how much of the NIGMS Recovery Act funds will be used to support such two-year grants, the following calculation provides a sense of scale. If we were to use all of the Recovery Act funds for this purpose and we assume an average total cost per grant of $340,000, this corresponds to 746 grants. In comparison, we expect to fund approximately 900 new and competing grants in FY09 through our regular appropriation.

Second, we have developed a range of supplement programs that will accelerate the tempo of ongoing research projects by providing funds for additional personnel or for specific items of equipment. It is important to note that these supplements will also be determined on a case-by-case basis and will not be done in a formulaic fashion. Since these supplements will be made to ongoing projects, it should be possible for the funds to have a relatively immediate economic impact. NIGMS has provided more details about its supplement programs, including how to apply for consideration, at www.nigms.nih.gov/recovery.

Third, NIH is continuing to develop a number of other new, competing funding

Jeremy M. Berg

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mechanisms in addition to the Challenge Grant program noted. These funding opportunities will be posted at http://grants.nih.gov/recovery. Note that, since funds must be committed by the end of this fiscal year to make two-year awards, the periods between the release of the funding announcements and the deadlines for these opportunities may be relatively short.

The Challenge Grant program was targeted, in general, to a full range of basic to applied areas that were perceived as "gaps" in the NIH portfolio and that had a credible possibility of making significant progress over two years. The same principles may be applied to the additional competing funding mechanisms, in part to avoid great imbalances between the number of applications submitted and the number of awards that NIH can support with the available funds. While these programs will require considerable effort from the scientific community in terms of both preparing and reviewing grant applications, the opportunities will allow additional investigators and projects to contribute to Recovery Act–supported research. Although there is no amount set aside for small business grants, Small Business Innovation Research and Small Business Technology Transfer Research grants are eligible for Recovery Act funds (see http://grants.nih.gov/grants/funding/sbirsttr_news.htm).

NIH is developing a number of other new, competing funding mechanisms in addition to the Challenge Grant program.

Balance and Collaboration

The balance among these three categories will vary from one IC to another for several reasons. First, the ICs have different missions, and some categories may be better suited to particular needs than others. Second, the ICs vary in some aspects of their funding policies. NIGMS, for example, has made relatively large administrative cuts in most competing grants in recent years. This is because we are very concerned that our success rates not drop too low in times of significantly constrained budgets. We recognize the costs of doing research and the impact of these cuts, but this approach allows us to spread our resources much more broadly. In FY08, our average administrative cut was 17% and the midpoint on our funding curve (see Figure 6 in http://publications.nigms.nih.gov/loop/20081125.html#1)—which is roughly analogous to paylines used by other ICs—was at approximately the 22nd percentile. In contrast, other ICs have made smaller administrative reductions and, as a result, generally have lower effective paylines. Similarly, the manner in which an IC has chosen to manage this trade-off between grant size and success rate might influence the balance of options selected for use of Recovery Act funds by that IC.

It is encouraging that the President and Congress recognize the contributions that biomedical research can make in the context of a short-term economic stimulus and as a key driver for improvements in health, healthcare costs, and economic prosperity. As NIH staff develop and implement various Recovery Act programs, the scientific community will clearly have significant roles to play. Your creative ideas and approaches to important scientific problems, your service as reviewers, and your advice and assistance in other ways will allow us to deploy these critical funds for the greatest economic and scientific benefit. And we will all need to work together to communicate the impact of Recovery Act funds on our institutions, communities, and states and on the U.S. as a whole. ■

—Jeremy M. Berg, National Institute of General Medical Sciences, National Institutes of Health

Comments are welcome and should be sent to bergj@mail.nih.gov or president@ascb.org.

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