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THE CHRONICLE OF HIGHER EDUCATION

Live Discussions

Shaking Up the NIH

Tuesday, December 4, at 1 p.m., U.S. Eastern time

Many scientists say the way grants are awarded by the National Institutes of Health — the nation's largest source of money for academic research — is broken. Peer reviewers, critics say, favor applications from tenured researchers for work that could advance knowledge only slightly, at the expense of bold proposals that could lead to huge strides in medicine and health care. The agency is evaluating proposals for reform. Should it set larger goals for the number of first-time grantees or cap the number of grants any one scientist can hold at once? Should it award more grants based on innovation? If so, how can peer reviewers predict who will be innovative?

Related Articles

- [NIH Casts Critical Eye on How It Gives Grants](#)(December 7, 2007)

The Guest

Elias A. Zerhouni is director of the National Institutes of Health.

A transcript of the chat follows.

Jeffrey Brainard (Moderator):

Hello and welcome. I'm Jeffrey Brainard, a reporter for The Chronicle of Higher Education. I will moderate today's discussion with Elias A. Zerhouni, director of the National Institutes of Health since 2002. Before that, he served as executive vice dean at the Johns Hopkins University School of Medicine. Please send in your questions now. Dr. Zerhouni, thanks for taking the time to join us today. The discussion will begin in a few moments.

Question from **James O'Rourke MD, University of Connecticut Health Center:**

Why cannot more grants for smaller amounts be awarded for innovative start-up projects, to keep alive ideas that need time to show promise? By all means, the NIH should cap the number of grants to any one scientist. And why can't we have more site visits to labs, to increase review quality and document by direct interview why a project is, or is not, important to science and to US health care? This could save millions, spread grant dollars more effectively, and impress Congress.

Elias A. Zerhouni:

We are indeed making more grants for innovative projects and to keep alive ideas that need time. Examples are New Innovator Awards and the NIH Director Bridge Awards, which funded almost 300 scientists this year. In addition, we funded 170 Pathway to Independence grants to promising postdocs.

Jeffrey Brainard (Moderator):

We've had many questions submitted in advance and will try to get to as many as we can in the time available. For everyone joining us today, please stand by while Dr. Zerhouni prepares his answers.

Question from **Tim Leshan, Brown University:**

Dr. Zerhouni - many of our young investigators are truly struggling to obtain their first NIH grant. As you have pointed out, this is due in large part to the lack of even inflationary NIH funding increases over the past five years, as well as a dramatic increase in grant applications. These young scientists are quite worried about their future in biomedical research. What can be done to ensure we don't lose a whole generation of scientists?

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Elias A. Zerhouni:

This is a very important issue, and we have implemented several approaches for alleviating the real pain for young scientists. One is the Pathway to Independence award, which funds 170 to 200 meritorious postdocs per year with RO1-equivalent funding for three years. We have set a goal of no less than 1,523 new investigators to be funded per year, which is the average of the past five years, and we achieved 1,608 in 2007. We need to continue to encourage our early career scientists across the board, and we are doing so within the budgetary constraints we have.

Question from Frank Schmidt, U of Missouri:

I perceive an increasing emphasis on multi-investigator, multi-million dollar program project grants, often in response to NIH-driven priorities, over the last decade. Two questions: Is the perception true? And, if so, has the NIH investigated how these investments perform relative to traditional RO1's?

Elias A. Zerhouni:

This is a common misperception. In fact the number of RFAs (requests for applications) increased at the beginning of the doubling but has been steadily decreasing since 2003 to a number that is lower than what it was before the doubling. In addition the RO1 program has remained the largest program of the NIH and has grown in absolute terms more than any other program, in number as well as in average amount per grant. NIH has a complex mission that simply cannot be accomplished with a single grant mechanism. For example, responding to congressional mandates for biodefense or research with direct impact on specific diseases requires a diversity of approaches and mechanisms. On the other hand, I and NIH believe that it is essential to maintain investigator-initiated RO1's, as they remain the vanguard of research discovery. For example, in all of our programs, including those in response to RFAs, RO1's are the preferred mechanism. Furthermore, the success rate of RO1's responsive to RFAs and PAs is not higher than investigator-initiated RO1s and in most cases is lower. RO1s represent about 2/3 of all RPG's (research project grants), which represent about 75% of all extramural funding.

Question from Beth, Urban Comprehensive University:

Dr. Zerhouni: I appreciate your time here today. Can you speak about the need to involve more developing faculty (we used to be able to call them "young" or "junior") in the review process itself. It's very time-consuming for these folks to be on a study section -- time that their department chairs and tenure committees often think would be better spent writing grants or in the lab. Yet, without that "new blood," I believe the culture on those study sections of funding the proven performers, even if their ideas are not the most innovative, will persist. I wonder if you would comment on whether and how NIH is addressing this problem. Thank you.

Elias A. Zerhouni:

This is a topic that came up during our review of the peer-review process, with some arguing that we need seasoned reviewers, and others, like yourself, arguing for training "new blood." The committees under Drs. Tabak, Berg and Yamamoto are looking at a series of possible approaches to achieve both goals while retaining the quality of peer-review panels.

Jeffrey Brainard (Moderator):

We're dealing with a technical glitch that has slowed down the pace of Dr. Zerhouni's answers. We will try to get to as many questions as possible, and The Chronicle will post a transcript of this discussion after it concludes. Thanks to all of our participants today for your patience, and please stand by.

Comment from Karen Spear, Methodist Research Institute:

In response to Beth, perhaps if new blood is indeed what is needed on the study sections, universities have a role to play in reconsidering the value of the developing faculty member's time sitting on study sections.

Question from :

How do you reconcile this larger effort to reform the overall NIH peer review system when the essence of what peer review means is treated so differently in different NIH institutes? For example, leadership at the National Institute of Mental Health (NIMH) has said there is no difference between an

application scored at the 1st percentile and one scored at the 20th. One result is that NIMH is not funding excellently reviewed applications (based on NIMH staff recommendations to NIMH Council), some scoring better than even the 10th percentile. What kind of message does this send to potential NIMH grantees about review? And how can you expect researchers to want to serve on study sections in the face of knowing their hard efforts are so easily ignored?

Elias A. Zerhouni:

I am not sure that any institute would equalize the 1st and 20th percentile. (I am not aware of such a case.) As a general rule, the recommendations and scoring are the most important factor under the percentile payroll determined by the institutes and their advisory councils. Program priorities and the need to look across the entire portfolio are just as critical, and advisory councils will make priority decisions that do not follow scoring if deemed necessary at the second level of review. Our data show, however, that this is generally not the case when a grant ranks at or better than the payroll of that institute, which may vary among institutes.

Question from David Nelson, U. of Rhode Island:

Personnel costs are usually the greatest amount of funds in a grant budget. Many universities and medical schools demand that their tenured and tenure-track faculty request much of their salary from grants rather than pay them directly. Why doesn't NIH limit the amount of salary that can be requested by tenured and tenure-track faculty to summer salary only?

Elias A. Zerhouni:

The allowed salary on NIH grants is capped by congressional mandate at executive level 1 (\$186,600) and thus many senior scientists cannot recover their whole salary. In addition, NIH does not view favorably scientists who claim a 100% effort since it implies no teaching and no administrative effort. Thus, in real terms, salaries are generally not fully recovered on an NIH grant. A mandatory cap on the percent effort is one of the many recommendations we have received lately through the review of the peer-review process.

Question from Thaddeus Wilson, University of Tennessee Health Science Center:

Two questions: 1. Why do all grants seem to be held up to the preferred "R01" criteria upon review? For example, the R21 is all about developing data for high-risk, high-impact grants, yet it is often reviewed just as critically as a five-year proposal requiring preliminary data, and in fact it is funded more often than not at a lower level than those other mechanisms? 2. Why do we bother to reinforce the mean in study sections by having all members vote equally when seriously, only the first, second and third reviewers have actually read the grant? (It would be nice to require a review from any member of the section wishing to vote on the application. This would allow interested members of the section the "right" to vote as long as they contribute significantly to the review process.)

Elias A. Zerhouni:

These are great points which have been proposed by many and are under intense review at this point in time. Stay tuned!

Jeffrey Brainard (Moderator):

It's worth noting that Dr. Zerhouni has said the NIH will have more to say about possible new directions in peer review and grant-making after Friday, and in the coming months after that. On Friday, Dr. Zerhouni is to meet with his advisory committee, which includes academic scientists and administrators. That group will discuss comments and suggestions from more than 2,000 scientists received by the agency during the past few months. The agency may begin pilot projects this spring to test some new ideas.

Question from Susan Chapman, Clemson University:

170 Pathway to Independence grants to promising postdocs sounds like an impressive number, until you break it down into 20 NIH institutes and over three funding cycles in a year. Then it is more like three grants per institute per funding cycle. Are there any plans to increase this number? I am a new assistant professor and thus ineligible, are there plans to do early career grants, like in the UK, rather than battle through the R01 funding mechanism, and make an early career category? Thank you.

Elias A. Zerhouni:

Well before this grant mechanism, postdocs could not apply directly in most cases. This is a real

change for early career scientists. Remember that these are five year grants and therefore at steady state we will have between 850 and 1000 funded post docs with 3 years of guaranteed RO1 level support to secure a tenure track position. Many institutes after the first couple of years of experience with this mechanism are now increasing their number of such grants.

Jeffrey Brainard (Moderator):

I meant to mention earlier, for any of our readers unfamiliar with the term, that 'R01' is an NIH code denoting the type of research-project grant most commonly awarded by the agency, typically to one principal investigator. Some academic researchers would prefer that NIH maximize the number of R01 grants versus grants for other purposes, such as large-scale, multi-investigator research projects.

Question from Jeanne McCabe, BloodCenter of Wisconsin:

Is there any chance grants will be fully funded this year as they were awarded? It creates an administrative nightmare having to rebudget all of our grants twice a year (first for the 80% cut and then for the 97% cut.) I do understand that these are difficult times, but this creates a lot of work for NIH staffers as well as for institutional staff. Thank you!

Elias A. Zerhouni:

Believe me, I know how painful this is. I and my colleagues feel very much like you do. Unfortunately, as you may know, we have not received a budget from Congress in time for the fiscal year (this year 2008 is no exception!), and as an agency we just cannot presume what the budget will be until it is voted. So we exercise extreme caution early in the year and catch up later.

Question from Faith B. Davis, M.D.; Ordway Research Institute, Albany, NY:

Why do reviewers not research some of the material they are asked to judge? The reviewers sometimes seem to have little understanding of the aims of proposals which they are reviewing. My impression is that 1) many reviewers have built-in biases, 2) are not sufficiently knowledgeable in the material which they review, and are not motivated to improve their own knowledge base in order to provide a fair review. This may be because more young and relatively inexperienced investigators are asked to review grants. For these reasons and many others I hope that the review process can be improved, although somehow I have doubts that this will happen. Thank you.

Elias A. Zerhouni:

One of the most frequent comments we have received, and it is under discussion ... stay tuned.

Question from Simo Arredouani, Harvard University:

Dr Zerhouni, Why is NIH unable to dictate a salary scale for postdocs who are paid from NIH grant money and work outside NIH? How can a postdoc live on \$30K/year in a city like Boston for example? Is there a will at NIH to stop this abuse? Thanks.

Elias A. Zerhouni:

NIH has increased postdocs' salaries in the past five years and publishes them as guidelines for institutions. Visit our website. For example, our lowest stipend for postdocs Year 0 is \$36,996, and we allow healthcare costs to be covered through an institutional allowance of \$7,850 per postdoc.

Question from Dr. Richard Darling, DDS; President & CEO: FAIR Foundation, a national research advocacy group:

The death rate from HIV/AIDS has plummeted in the USA over 90% in many states, yet you are still spending 10% of your budget on this illness resulting in \$3,000 being spent on each AIDS patient versus \$50 on each diabetic, even though diabetes kills more Americans than AIDS and breast cancer combined. All other diseases except cancer receive similar pittances. When are you going to recognize the success of the AIDS community and redistribute some of that 10% to other illnesses? Please don't reference global HIV/AIDS, because its solutions do not include more bio-medical research, and those solutions have been repeatedly stated by Dr. Fauci and the President: providing the existing drugs (HAART), prevention education, harm-reduction policies and setting up health infrastructures so these remedies are delivered. Thank you.

Elias A. Zerhouni:

HIV/AIDS remains the single most important issue that may impact the world in terms of global health if an ultimate solution, such as an effective vaccine, is not found. Comparing it to other diseases ignores the fact that this is a pandemic that will continue to grow at a compounding rate. We need to invest more across all diseases and not penalize one kind of human suffering for another, I believe.

Question from **Elizabeth Joy, MD, MPH, University of Utah**:

My experience with the peer-review process at the NIH is somewhat limited, having submitted only two grants as principle investigator. As a clinician researcher in Family and Preventive Medicine, my focus has been on practice-based research, still a relatively new venue for clinical investigation. To adequately assess the impact that proposed research has on patients and providers, and to assess proposed methodology with respect to answering a clinical-research question, peer-review panels must include practicing clinicians, even if they themselves have not been funded by the NIH. Could the NIH partner with the Agency for Healthcare Research and Quality, which has been at the forefront in supporting practice-based research, to identify such reviewers?

Elias A. Zerhouni:

We do partner with AHRQ and actually fund from the NIH budget a large portion of AHRQ's activities.

Question from **Larry Leguire, Nationwide Children's Hospital**:

Let us assume that peer reviewers cannot predict who or what grant proposal will lead to a major breakthrough. This assumption would lead one to conclude that peer review is of little use for determining a breakthrough proposal. Therefore, why not do away with peer review, at least for some of the NIH funds, and seek alternative funding strategies -- for example, funding proposals based on the PI's prior published work in the field that shows major accomplishments? The funding criteria, however, must be objective (e.g., impact factor, number of publications), and alternative strategies developed for newly minted researchers.

Elias A. Zerhouni:

Peer review is the cornerstone of our system and mandated by congressional statute, and we support its preservation fully. Nonetheless, it is fair to ask ourselves at regular intervals how it is performing given changes in science. This is why I asked two high-level panels to review peer review, with the goal of enhancing it with ideas like yours, if feasible. My stated goal is that peer review should fund the best science by the best scientists at a minimum bureaucratic burden.

Question from **human taxpayer/researcher, major state university**:

In the "significance" criterion for grant evaluation, why does the word HUMAN not appear? What can the NIH do to ensure that studies will maximize their relevance to HUMAN health?

Elias A. Zerhouni:

Good question. Evidence over the years has shown overwhelmingly that scientific breakthroughs for human health often come from completely unrelated fundamental research. In my field, for example, CAT scanners were first developed to look at rocket engines and the inside of complex machines. Only later did it become relevant to human health. In fact, I had trouble getting funded because reviewers said that the level of radiation will preclude human applications!

Jeffrey Brainard (Moderator):

That concludes today's discussion. Sorry to those who submitted questions that were not answered in the time we had available. Thank you to our guest, Dr. Zerhouni, and to everyone who participated. Dr. Zerhouni makes additional comments about the NIH's peer-review and grant-making processes in a recorded interview available today on The Chronicle website's home page. In addition, Congress will resume consideration this month of legislation to finance the NIH in the 2008 fiscal year -- and The Chronicle will be following the progress. Good day.

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