UNITED STATES

Mid-career crunch

Some senior scientists feel neglected by the National Institutes of Health's grant formula.

BY KENDALL POWELL

Only a minor spark was needed to set off an online firestorm about the precarious state of US biomedical research funding. In late January on the blog Extramural Nexus, Sally Rockey, deputy director for extramural research at the US National Institutes of Health (NIH), announced the creation of a committee to advise the NIH on the future needs of the biomedical workforce. Daniel Noonan, a molecular biologist at the University of Kentucky in Lexington, wrote in response what he terms a "spontaneous post", outlining what he believes to be problems with current NIH policies that have disproportionately affected funding for mid-career biomedical scientists.

His sentiments struck a chord — resonant to some, and off-key to others. Noonan's post made the e-mail rounds of academic departments and touched off heated online debates about whether the NIH system is 'broken' or headed for disaster, given looming budget concerns. The agency is facing flattened budgets for fiscal years 2011, 2012 and beyond; grant submissions have the lowest success rates in a decade; and policies favour new investigators. Mid-career scientists are under funding pressure, and the situation is creating a growing number of tenured but unfunded professors. Lacking a major NIH grant, these researchers may be forced to shrink their staff numbers, or shift to teaching, administrative or even non-science positions.

In the interest of stretching funds further, Noonan advised the NIH to delay large initiatives such as building the National Center for Advancing Translational Science; limit individual investigators to three grants or US\$1 million a year; implement a formula that gives investigators with multiple grants less per grant for indirect costs from university overheads; factor in an investigator's non-NIH funding when deciding whether to provide a grant; and limit or eliminate funds for construction projects.

Applications for NIH grants are scored for scientific merit; for investigators beyond the early stages of their careers, only those scoring in roughly the top 10% get funded. In 2010, success rates for R01 grants — the NIH's primary grant for individual investigators — were

around 15–25%. "If you lose that one grant-renewal opportunity, it's hard to recover in this day and age," says Noonan. The pool of money dedicated to investigator-initiated grants has shrunk, he says, and with limited state and federal budgets, the NIH needs to find ways to generate money from within.

Rockey has pledged to forward the online discussions to the workforce advisory committee, which will be chaired by Shirley Tilghman, a molecular biologist and president of Princeton University in New Jersey. But Rockey says that no decisions have been made to cap applications from individuals. "There are a lot of

individuals has received some attention. Several investigators receive multiple NIH grants: a 2008 analysis by *Nature* found 200 scientists who held 6 or more (see *Nature* 452, 258–259; 2008). And the ASBMB calculates that in fiscal year 2009, 1,600 scientists each received \$1 million or more from the NIH. Rockey points out that the National Institute of General Medical Sciences already has a capping policy — an investigator already receiving \$750,000 or more from any source must justify new grant submissions.

But she emphasizes that such multiple-grant holders are rare. "Contrary to popular belief, the average NIH-funded scientist holds 1.4 grants at any one time," she says. "So there is not a huge cadre of people who have eight, nine or ten grants." But she concedes that compared with a decade ago, more researchers are fighting over the same sized slice of pie, as a result of budget doubling that has now levelled off.

"It's a difficulty for just about everybody — early-, mid- or late-career — in sustaining NIH funding," says Rockey, noting that scientists' frustrations stem from "a lot of pent-up good science going on that we are unable to fund." Tilghman's workforce advisory committee will try to determine the size and composition of the biomedical workforce that the NIH can support.

Not everyone thinks that the NIH needs to reconsider how grant funding is apportioned. Several scientist bloggers believe that Noonan's comments imply that scientists should have access to NIH resources regardless of ability or outcomes; they counter that meritocracy should rule. One contributor wrote that with budgets shrinking, researchers really should be concentrating on communicating the value of research to the public.

Rockey advises mid-career scientists facing an R01 renewal to consider a no-cost extension (stretching out existing grant funds) for another year to gather data or publish results; or to try making contingency plans, such as seeking bridge funding from their institutions. "Your reviewer is taking into account what you have already accomplished, so be sure to highlight how well your research is going and the strengths of your research team," she says. Rockey's top recommendation, she says, is to seek advice from the relevant grant-review programme officer. ■

different thoughts about how one might go about this," she says. "We want to have data and facts and information before we resort to any social engineering of the workforce."

Ideas for reform extend beyond unhappy individual investigators. The 12,000-member American Society for Biochemistry and Molecular Biology (ASBMB) in Bethesda, Maryland, has proposed some recommendations, says Benjamin Corb, the society's director of public affairs. The ASBMB seeks a cap on the funding going to any one person, and suggests that money be redirected to the R01 pool from large initiatives that have not made medical breakthroughs, such as the Genome-Wide Association Studies programme and the Protein Structure Initiative. The ASBMB also proposes that the NIH adopt a sliding scale, to partially fund lower-scoring but meritorious grants. The society presented its recommendations to six institute directors and Lawrence Tabak, the NIH's deputy director, on 14 March.

The idea of capping the number of awards to