

SPECIAL REPORT

Fixing a grant system in crisis

Facing a flood of applications from researchers, a UK funding agency is taking drastic steps — and partners around the world are watching how it plays out. **Richard Van Noorden** and **Geoff Brumfiel** report.

Like every scientist, Philip Moriarty has experienced the pain of a failed research application. But the e-mail that he received on 21 January from the UK Engineering and Physical Sciences Research Council (EPSRC) was a far more personal rejection.

Moriarty, a physicist at the University of Nottingham, had been identified as a “repeatedly unsuccessful” applicant, said the e-mail, which was copied to his university’s research office. Under a new EPSRC policy that comes into full effect on 1 April, he is now in a year-long ‘cooling-off’ period, limiting him to making only one funding bid to the council in that time. Previously, there was no limit — in principle — to the number of applications that scientists could make.

“The thing that really hacks me off is the unfairness of the scheme,” says Moriarty, who in 2008 was awarded an EPSRC 5-year, £1.5-million (US\$2.3-million) leadership grant designed to fortify “talented researchers”. “There is no evidence at all to suggest that peer-review panel rankings are sufficiently robust to be used in the way the EPSRC has introduced,” he says.

Moriarty is one of around 140 researchers whose applications the agency — Britain’s main funding body for physical sciences — will start to ration next week. Although some scientists are not troubled by the policy, others have tagged it “blacklisting” and “draconian”. “No one is supportive of this crazy scheme,” says Amalia Patané, a physicist also at the University of Nottingham who has been told — along with 450 other scientists — that one more rejected application could put her on the cooling-off list too.

The step by the EPSRC, which plans to spend £815 million on research and training in the 2009–10 fiscal year, is just one of a series of measures designed to relieve pressure on an overloaded system. Although 43% of applications to the council were funded in 2000, by 2008 that proportion had dropped to 26% (see ‘Poor odds’). At the same time, the council has faced an increasingly difficult challenge finding peer reviewers to look at the roughly 5,000 proposals it receives annually.

In addition to imposing the new rule, the EPSRC has already begun refusing uninvited resubmissions of failed proposals. For the moment, the policies seem to be working: the

agency has received around 35% fewer applications than this time last year, says Clive Hayter, the council’s associate director for research.

With submission rates on the rise and grant success rates plummeting around the world (see ‘A common problem’), other funding agencies in the United States, Europe and Asia are taking note of the EPSRC’s approach. Most say that they face similar pressures — and that if the situation got worse they would be willing to consider similar drastic steps. “These rules are more sensible than I would have feared,” says one official at the US National Science Foundation who asked not to be named. Although he had initially thought that the EPSRC’s move was too drastic, he now says that “I could see this being proposed and discussed here”.

Three strikes and you’re out

The EPSRC is caught between a flat budget (adjusted for inflation) and the rising demands of researchers. The number of applications has remained constant since 2000, but the agency has been pushing to award fewer, larger grants. As a result, success rates have plummeted. Last year, some of the council’s panels — which rank research proposals that have already been peer reviewed — awarded funds to fewer than 15% of applications.

A 2006 report by Research Councils UK, the umbrella body for the seven UK research councils, assessed the efficiency and value for

money of peer review (see www.rcuk.ac.uk/research/peer/efficiencypr.htm). The report found that such low success rates at the EPSRC have “significantly degraded” the system, says Hayter. Scientists were avoiding submitting high-risk proposals for fear of almost certain rejection, hoping instead that safe, incremental research would be more likely to be funded in a system that was increasingly seen as a lottery. Overall, this damages the quality of the science produced by the researchers that the council funds, says David Delpy, chief executive of the EPSRC. “It’s a burden on the community,” adds Hayter. “Our goal is to ask the community at large to change its behaviour.”

To push that change, the agency announced in 2009 that scientists would be immediately barred from applying for grants for one year if they met two conditions: that they were principal investigators on at least three proposals that fell in the bottom half of panel rankings over a two-year period; and that their overall success rate was below 25%. This ‘three strikes and you’re out’ rule set off a storm of protest, and was subsequently delayed and softened to the current policy of one submission per year (see *Nature* 459, 20; 2009).

“Poor scientists being blacklisted doesn’t bother me,” says Mike Glazer, a physicist at the University of Oxford. The problem, he says, is that the system doesn’t just exclude scientists who keep submitting bad proposals — it can also exclude promising scientists hit by a run of bad luck in their applications. Tom Welton, head of chemistry at Imperial College London, adds that “when you do something that affects somebody’s career, you’d better be sure you’re doing it right”.

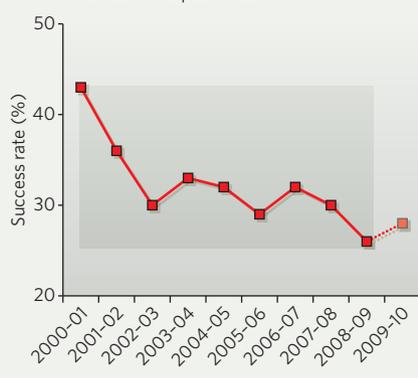
Many researchers that *Nature* asked to comment on the scheme did not want to be named. But some worry that the exclusion will create a stigma that could particularly damage younger researchers — especially because their identities are disclosed to their institutions. “It isn’t about naming and shaming,” responds Hayter. He argues that if an institution is going to help researchers change their submission behaviour, then it has to know who they are.

Hayter, who signs each letter to the targeted researchers, hopes that the rules will be only

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POOR ODDS

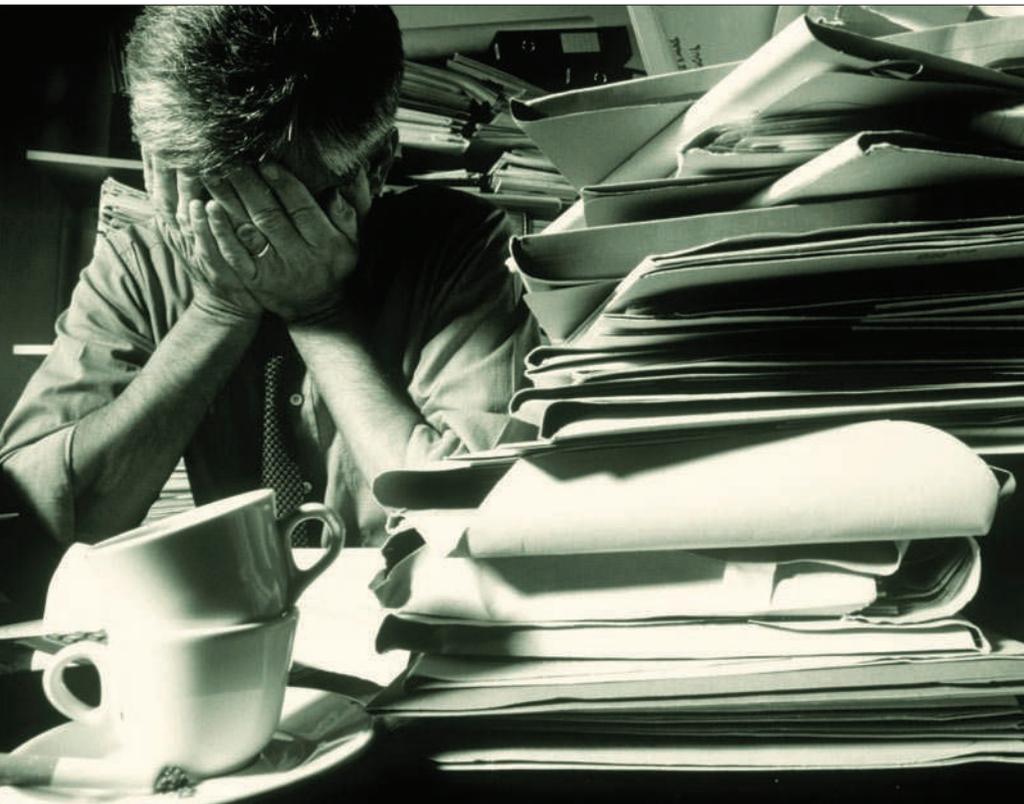
The chances of having a grant funded by the EPSRC have decreased in the past decade.



SOURCE: EPSRC



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The United Kingdom's physical-sciences funding council is struggling to find scientists to peer review the 5,000 grant applications it receives every year.

temporary. If the community can learn to send in fewer applications and the EPSRC can sustain success rates of 30–40%, “I think we’ll be willing to relax our measures”, he says.

Measured response

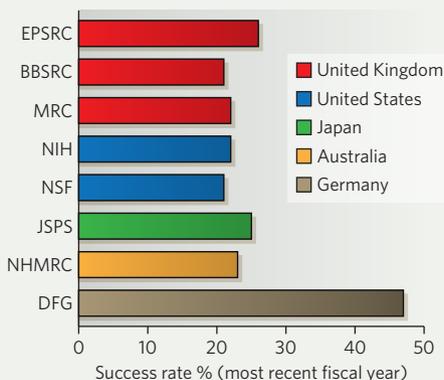
Granting agencies in other countries face similar challenges. Applicants to the US National Institutes of Health (NIH) in Bethesda, Maryland, had a success rate of just 22% in 2008, and a recent flood of pitches for stimulus funding hasn’t helped to improve that number, says Sally Rockey, the NIH’s acting director of extramural research. The Japan Society for the Promotion of Science (JSPS), a funding body affiliated with the Japanese education ministry, has a success rate of around 25% for its Grants-in-Aid for Scientific Research, the bread-and-butter funding stream for the country’s scientific community. The DFG, Germany’s main research agency, has a success rate of 47%, but it is under less pressure because scientists in Germany can receive more of their funding directly from their universities, compared with their colleagues in the United Kingdom or the United States.

In trying to address the problem, these agencies have taken a more egalitarian

approach than the UK council. In Japan, for example, a stagnant budget and increasing number of grant applications have led funding bodies to decrease the size of individual grants. But Ichiro Kanazawa, president of the Science Council of Japan, which acts as an advisory body to the government, worries that this trend is compromising scientists’ ability to do the

A COMMON PROBLEM

Grant-application success rates have fallen at many science funding agencies around the world.



From top: Engineering and Physical Sciences Research Council; Biotechnology and Biological Sciences Research Council; Medical Research Council; National Institutes of Health; National Science Foundation; Japan Society for the Promotion of Science; National Health and Medical Research Council; German Research Agency.

research they promise in their applications.

In the United States and Germany, funding agencies have cut down the length of proposals in the hope that shorter applications will reduce the workload of grant officers and peer reviewers. The DFG announced last month that it would drastically restrict the number of publications that researchers can list in their grant applications (see *Nature* 463, 1009; 2010). But requiring shorter grant requests could actually make it easier for scientists to bombard the agency with applications, says Rockey.

Neither Rockey nor other officials contacted by *Nature* felt that they had a good solution to the problem. So for now, they would rather watch the EPSRC experiment than implement tougher measures themselves. Rockey says that the NIH had considered allowing reviewers to reject a proposal without the possibility of resubmission, but the research community revolted. Many feared the stigma that such a policy would create, especially in the US biomedical community, where researchers’ careers can depend on the number of grants they pull in.

In Japan, granting bodies are becoming increasingly desperate to deal with growing pressure on their grant systems, but “we have no concrete measures and are unlikely to come up with any that could overcome criticism”, says Hiroshi Takahashi, a programme director at the Japan Science and Technology Agency in Tokyo, which is affiliated with the education ministry and handles larger grants than the JSPS.

Despite fears that UK scientists would stage mass protests over the more stringent grant procedures, as they did after last year’s tougher proposal, most UK researchers now seem resigned to taking part in the funding experiment. “The only thing we can do is let it play out — and evaluate any unintended consequences,” says Welton.

A few, however, have simply opted out of the system. Martin McCoustra, a chemical physicist at Heriot-Watt University in Edinburgh, who also received a blacklisting e-mail, says that he will turn down any requests from the EPSRC to review proposals. For other scientists, the EPSRC’s policy has permanently soured their relationship with the agency. As Tom Simpson, a chemist at the University of Bristol and a fellow of the Britain’s Royal Society, says: “While having some sympathy with the situation that the EPSRC finds itself in, I really believe that it is treating the community in the shittiest way conceivable.”

With additional reporting from David Cyranoski.

See Editorial, page 465.

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SOURCE: EPSRC/BBSRC/MRC/NIH/NSF/JSPS/NHMRC/DFG