LETTERS

edited by Jennifer Sills

Fixing the Leaky Faucet

A. I. LESHNER'S EDITORIAL "JUST GIVE THEM GRANTS" (16 May, p. 849) is an urgent call for dedicated funding for new investigators in science. However, without a means to sustain new investigators once their laboratories have been established, another crisis will quickly follow: the inability to retain the talent brought to the bench. This leaky-faucet phenomenon is already well known to women in medicine and science, with much good will to slow down these departures but little resolution in sight. The academic and funding community must be committed to the full length of the science career, not just the early part of it. Why recruit if we cannot retain? To do so will only create disillusionment and distrust among those in whose hands the future of science lies.

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Redefining Academic Success

A. I. LESHNER MAKES SUCH A COMPELLINGLY simple recommendation in his 16 May Editorial ("Just give them grants," p. 849) that one cannot but wonder why it need be made at all. If junior academic scientists need a government-funded grant to launch their independent research career, why not just give them grants? Problem solved. However, if the academic research community is really going to tackle what is, despite the Editorial's straightforward prose, a very complicated issue, then it should also consider another seemingly simple question extracted from the Editorial's first sentence. Why is it that securing external funding for independent research is a "gold standard" for academic success, particularly in the first few years of a career spanning decades? Shouldn't the early investment in a junior faculty member's scholarly research be the responsibility of the institution hiring him or her? Might not considerations of success also include the originality of the individual's research, the contributions the research could make to the intellectual content of his or her chosen field of research, and the value of the individual as a colleague? Surely there are ways for institutions to develop internal metrics of success. So, here is another simple recommendation: It is time for academic institutions to stop ceding their promotion and tenure decisions to the NIH and other external funding bodies.

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Caught in the Middle?

AS A POSTDOCTORAL FELLOW ENTERING THE market for biology faculty positions, I was happy to hear that 25% of NIH Research grants are going to new investigators who have never received an RO1 (Editorial, "Just give them grants," A. I. Leshner, 16 May, p. 849). My sense of schadenfreude was fulfilled to hear that these funds will come off the backs of senior investigators who, despite clearly being deadwood, are hogging multiple grants. But then I wondered what will happen to me in the phase between being a new investigator and a senior investigator. Surely there must be some intermediate step. The transformation from plucky young innovator to conservative graybeard cannot be instantaneous. After that first RO1, I will have some publications and some data, but not as many as my more senior competitors. And the funding situation for me will be even tighter than before, because a significant fraction of funds will be going to those undeserving, knee-biting, new investigators. Additionally, I will have reached a stage where I have significant responsibilities—graduate students and postdocs will be depending on me for their career advancement and livelihood. So I am left asking, what will happen to new investigators once their honeymoon is over?

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Just Give Them Fellowships

IN THE RECENT EDITORIAL HIGHLIGHTING THE issues faced by young academics in securing funding for their own research ("Just give them grants," 16 May, p. 849), A. I. Leshner touches on an important point: the subversion of personal research interests during postdoctoral training periods. As an example, UK government-funded research

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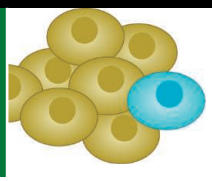

How cancer spreads

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Bidding high!

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councils typically expect grant recipients to be appointed at a higher education institute, with a minimum position of Lecturer, before applying for a research grant. As a result, the pressure on freshly minted Ph.D.'s in academia is, as stated, to follow the path of postdoctoral research on established projects, rather than trying to secure their own funding.

Clearly, the UK research councils place strong emphasis on the training of postgraduates, but there appears to be little incentive for those students to remain within academia in the hope of pursuing their own lines of research by obtaining individual postdoctoral fellowships (*1*). Such fellowships provide opportunities for young scientists to "make their mark" in their respective fields without being tied to lines of research that they do not wish to pursue. By awarding more fellowships, funding organizations may retain more individuals to contribute to the continuity of scientific enterprise and, in turn, fellows may find getting that first grant or tenure position a little bit easier.

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Reference

1. Research Councils UK (www.rcuk.ac.uk).

Destabilizing the Pyramid Scheme

A. I. LESHNER'S EDITORIAL "JUST GIVE THEM grants" (16 May, p. 849) suggests yet another well-meaning "fix" for the poor funding support for advancing research careers of postdocs and young investigators in the United States, especially in the biomedical fields. Setting "funding quotas" by earmarking a percentage of new grants, those from the NIH in particular, to investigators younger than a certain age probably will not aid a situation that is, largely, a pyramid scheme.

Pyramid schemes provide considerable incentives for those at the top [funded principal investigators (PIs), tenured faculty, and most medical school faculty] and virtually no tangible incentive to those at the bottom, who support the scheme at the laboratory bench (graduate students, postdocs, and research associates). Perhaps it is time for some disincentives for those at the top. Some suggestions follow.

(i) Any grant proposal that gives salary support for postdocs must also include funds for postdoc-only projects (mini-grants within a grant). (ii) Any PI who proposes to put postdocs on the grant payroll should have documentation that he or she has also done a stint as a postdoc. Who better knows the value of mentoring than those who have been mentored? (iii) Postdoc

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training is a disheveled cottage industry. Establish a central clearinghouse of "postdoc specialists" akin to "Matching Day" for medical school graduates seeking advanced training in limited residency training positions. (iv) If postdocs are to be a necessary part of the research enterprise, then PIs, or their departments or institutions, should provide some guarantee of financial support beyond the tenure of a particular grant to those postdocs who provide credible service to that grant but who cannot find their own support elsewhere.

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Biotechnology Innovation in Africa

AFRICA IS PRESENTLY AT THE PRECIPICE OF A socioeconomic renaissance. However, diseases such as malaria, AIDS, and hypertension remain common and important health problems facing the continent. The recent Policy Forum by T. J. Tucker and M. W. Makgoba ("Public-private partnerships and scientific imperialism," 23 May, p. 1016) should invoke further discussions on new approaches for increasing the effectiveness of global efforts against neglected African diseases.

In the 1970s, 70% of resource flows from the United States to the developing world were from official development assistance and 30% were private. Today, 85% of resource flows from the United States to the developing world are private and 15% are public. These changes in resource flows reflect the emergence of the private for-profit sector and the nongovernmental sector as crucial participants in the development process (*1*). They have formed many new alliances and programs in addition to government aid. Unfortunately, when funds for these programs run out, the progress often stagnates or even reverses. Few public and private donor programs exist to support more sustainable programs, such as small indigenous African bioscience businesses that are evolving biotechnological innovations specifically relevant to the region.

Developing local biotechnology capacity is essential for ensuring availability and access of health care products in a sustainable manner. Several governments in sub-Saharan Africa (such as Nigeria and South Africa) recognize this and have increasing public sector support for biotechnology innovation and entrepreneurship to encourage small indigenous biotechnology companies that are working to translate relevant research discoveries to usable products. National and regional public policies and priorities are encouraging the local development and manufacture of essential rapid diagnostics and genuine medicines that are critical to health care needs of the people, as a way of making these products and services more readily accessible to more people. In response, an increasing number of entrepreneurial scientists of African descent (led by Africans in The Diaspora) are establishing local, small, socially responsible biotechnology enterprises. These efforts are inspired primarily by necessity and a focus on translating relevant discoveries to products and services that address regionally prevalent diseases.

A model that has not gained broad acceptability among private donors is direct support in the form of pass-through grants to small indigenous for-profit bioscience businesses. Robert Grant had proposed a similar context in his "Research in situ" model (*2*, *3*). By working with indigenous for-profit bioscience companies, multilateral funding organizations and agencies can potentially deliver more sustainable change. This is especially crucial because many developed nations have modeled small businesses as the core of their biotechnology development strategy, strengthened through government and investor-backed small business grants and loan programs. Streamlined donor support to indigenous small bioscience businesses can enable the development of specific new products and services consistent with the socioeconomic needs of the continent. Additionally, through expanding collaborations with universities and institutes, the indigenous biotechnology firms are evolving to create open avenues of knowledge sharing to create these products in a sustainable manner. This can potentially drive the development of biotechnology on the continent.

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1. USAID Global Partnerships (www.usaid.gov/our_work/global_partnerships/gda).
2. R. M. Grant, *Nat. Methods* **4**, 887 (2007).
3. Editorial, *Nat. Methods* **4**, 877 (2007).

CORRECTIONS AND CLARIFICATIONS

Reports: "Alignment uncertainty and genomic analysis" by K. M. Wong *et al*. (25 January, p. 473). C. Dewey, A. Schwartz, N. Bray, and L. Pachter kindly directed our attention to an inconsistency in Fig. 1, which shows six different estimated trees for seven different alignments of the open reading frame (ORF) YPL077C, and the Supporting Online Material containing the maximum likelihood estimates for the 1502 ORFs that we examined. When equally likely trees are accounted for, maximum likelihood yields only four different trees for YPL077C. We intended to illustrate an extreme example in which alignment uncertainty produces different estimates of phylogeny, and not to select among equally likely trees to make the differences as great as possible. Indeed, there was no reason to do so, because we could have illustrated the point with five other ORFs, all with one estimated tree for each alignment and resulting in six different trees for the seven alignment treatments (see the Supporting Online Material). Of potentially more importance, however, our results did not account for equally likely trees, something that occurs in 1.5% of the phylogenetic analyses. Figure 1 repeats the analyses performed in the original Report and accounts for equally likely trees. As before (Fig. 2A), we see a significant positive correlation between alignment distances among alignment treatments and the distances between trees estimated from the alignments. Accounting for equally likely trees does not change the relation between alignment variability and phylogeny estimation we originally discussed.

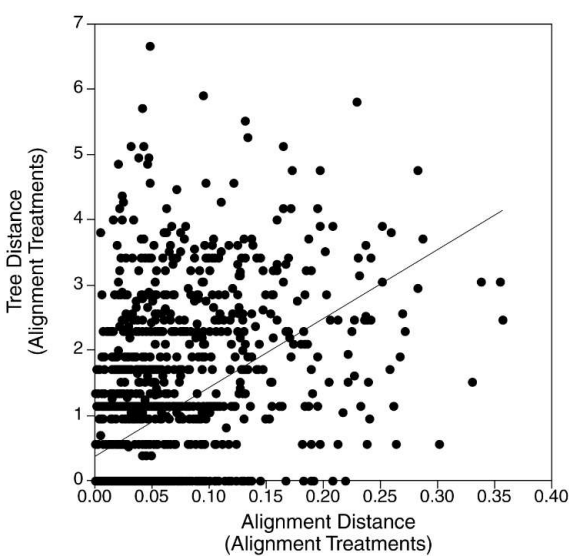

Fig. 1. Positive correlation between the Robinson and Foulds [D. Robinson, L. Foulds, *Math. Biosci*. **53**, 131 (1981)] measure of topological distance among trees estimated from different alignment methods and alignment variability among alignment treatments (Spearman's rank correlation: $r_s = 0.52$, $P < 0.0001$; note that the correlation coefficient changes from $r_s = 0.53$ to $r_s = 0.52$ when equally likely trees are accounted for).