

training is a disheveled cottage industry. Establish a central clearinghouse of "post-doc 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.

DUAINE R. JACKOLA

8436 Second Avenue South, Bloomington, MN 55420, USA.  
E-mail: drjackola@q.com

## 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.

EDDY C. AGBO,<sup>1\*</sup> SIMON AGWALE,<sup>2</sup> CAMELLUS O. EZEUGWU,<sup>3</sup> BOITUMELO SEMETE,<sup>4</sup> HULDA SWAI,<sup>4</sup> ANTHONY IKEME,<sup>5</sup> RICHARD I. SOMIARI<sup>6</sup>

<sup>1</sup>Fyodor Biotechnologies, 26 Ogui Road, Enugu, Nigeria, and 3607 Frankford Avenue, Baltimore, MD 21214, USA. <sup>2</sup>Innovative Biotech Ltd., 1 Abdu Abubakar Street, GRA, Post Office Box 30, Keffi, Nasarawa State, Nigeria. <sup>3</sup>The Johns Hopkins University School of Medicine, Department of Medicine (JH Cardiovascular Group Inc.), Baltimore, MD 21201, USA. <sup>4</sup>Council for Industrial Scientific Research (CSIR)—Polymer and Bioceramics, Post Office Box 395, Pretoria, South Africa. <sup>5</sup>Clinitriad Pharma Services, Exton, PA 19341, USA. <sup>6</sup>ITSI-Biosciences, Johnstown, PA 15904, USA.

\*To whom correspondence should be addressed. E-mail: eddy.agbo@fyodorbio.com

### References

1. USAID Global Partnerships ([www.usaid.gov/our\\_work/global\\_partnerships/gda](http://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).

