ships, research funds, or science prizes, it would create a large pool of new funds for science. This plan would require willingness and effort on the part of the Indian educational establishments to develop comprehensive databanks of their graduates and to approach their alumni for donations. The current attitude in most Indian universities seems to be one of disinterest, neglect, and even hostility toward their graduates.

The Indian Institutes of Technology (IITs) are one of the few success stories of Indian education. The IITs are said to be the best gifts to the United States and Canada because a large proportion of their graduates are working in those countries. Imagine the difference it would make if all graduates from the ITTs started a fund for an endowment in their respective alma mater.

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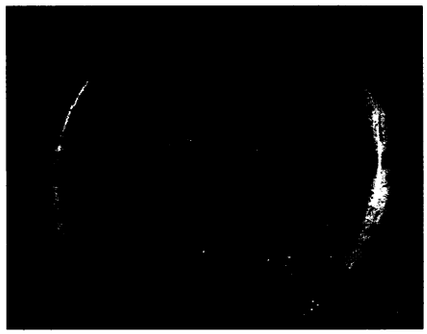
## Too Mammoth an Undertaking

In his News of the Week article "Siberian mammoth find raises hopes, questions" (29 Oct., p. 876), Richard Stone describes the excavation of a presumably well-preserved mammoth and the possibility of researchers attempting to resurrect the species. It is a matter of debate if it is desirable to "create" mammoths or other extinct species. However, it would never work. The excavated organic material is thousands of years old, and cloning requires a cell with a complete and undamaged genome. Just a single DNA base in the wrong place could lead to lethality or severe genetic disorders.

A number of DNA studies on mammoths have been published (*1*), and the retrieval of single-copy nuclear DNA has recently been reported (*2*), but even the best preserved permafrost specimens yielded fragmented and damaged DNA.



Not the place to be if this ice-bound mammoth were cloned, but cloning seems an unlikely prospect.

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**References**

1. For example, see, E. Hagelberg *et al.*, *Nature* **370**, 333 (1994); H. Yang, E. M. Golenberg, J. Shoshani, *Proc. Natl. Acad. Sci. U.S.A.* **93**, 1190 (1996); M. Noro *et al.*, *J. Mol. Evol.* **46**, 314 (1998).
2. A. D. Greenwood *et al.*, *Mol. Biol. Evol.* **16**, 1466 (1999).

## NSF Urban Systemic Initiatives

In their Editorial "Science learning, science opportunity (*Science*'s Compass, 8 Oct., p. 237), National Science Foundation (NSF) Director Rita R. Colwell and National Science Board Chairman Eamon M. Kelly give a glowing but what seems a largely unfounded report on the accomplishments of the NSF systemic reform initiatives. The authors cite as evidence an increase in student performance in mathematics in Chicago, Illinois (61 out of 62 high schools), and a tripling of students passing science and mathematics advanced placement (AP) tests in Dallas, Texas.

Although it is true that Chicago public high schools have shown increases in standardized (Illinois Goals Assessment Pro-

gram) test scores in mathematics over the past 2 years (in 51 out of 60 schools reporting), increases in the same students' reading scores have been even greater (57 out of 60). It seems plausible that Chicago's lower performing students are doing better on math tests because they can read the problems, not necessarily because of NSF systemic reform. Only the three top-scoring high schools in Chicago exceeded the Illinois average for math scores in 1997, and all three showed a drop in math scores the following year. Seven out of the nine Chicago schools with falling math scores started above the district average.

Student scores on science and math AP tests have also risen in Dallas, but once again the role of NSF systemic reform is questionable. The Dallas-based O'Donnell Foundation has developed a long-running incentive program in which AP teachers receive special course training and a salary supplement, and AP students receive a subsidy for exam fees and a $100 minischolarship if they pass the AP College Board exam. The O'Donnell Foundation has tracked and reported on the efficacy of their work and can account for the student gains. In their Editorial, the NSF director and the National Science Board chairman appear to take credit for what is very likely to be another group's accomplishment.

"Discovery learning" methods of science and math instruction may be widely embraced by the education community, but if the scores from Chicago and Dallas are the most robust data that NSF can assemble to justify their systemic initiatives, then the program should be carefully scrutinized.

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***Response***

Metzenberg's letter questions the specific examples we used to illustrate our comments on the NSF-supported Urban Systemic Initiatives (USIs). The nature of systemic reform activity—aligning and integrating the uses of different types of resources—makes explicit cause-and-effect attribution difficult. There are always several related indicators of performance and multiple contributors to changes in performance for any one indicator. The factors Metzenberg cites in Chicago and Dallas may well contribute to the phenomena we described. However, we are confident, on the basis of the reports of similar results across the USIs, that the systemic reform activities played an important role as well. We are pleased that NSF has helped so many urban public school systems to move forward in improving their science and mathematics education. Our examples—drawn from public testimony at a National Science Board hearing on kindergarten through grade 12 education held in Chicago—are just the tip of an iceberg of data coming from Chicago and Dallas; Detroit, Michigan; El Paso, Texas; Memphis, Tennessee; and many other locations.

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## CORRECTIONS AND CLARIFICATIONS

In the essay for the Amersham Pharmacia Biotech & *Science* Prize "Tantalizing transcriptomes—SAGE and its use in global gene expression analysis" (*Science*'s Compass, 19 Nov., p. 1491), the Web address in the figure legend should have read www.sagenet.org

In the News Focus article "Turning thoughts into actions" by Marcia Barinaga (29 Oct., p. 888), the correct affiliation for Apostolos Georgopoulos is the Minneapolis VA Medical Center, University of Minnesota.