References

1. Committee on DNA Technology in Forensic Science, *DNA Technology in Forensic Science* (National Academy Press, Washington, DC, 1992).
2. R. C. Lewontin and D. L. Hartl, *Science* **254**, 1745 (1991).
3. R. Chakraborty and K. K. Kidd, *Science* **254**, 1735 (1991).
4. D. E. Krane, R. W. Allen, S. A. Sawyer, D. A. Petrov, D. L. Hartl, *Proc. Natl. Acad. Sci. U.S.A.* **89**, 10583 (1991).
5. R. Chakraborty, in *Multivariate Analysis*, P. R. Krishnaiah, Ed. (Elsevier, Amsterdam, 1985), vol. 6, p. 77; see note 26 of B. Devlin, N. Risch, K. Roeder, *Science* **259**, 748 (1993) for other statistical inadequacies of the current apportionment analysis.
6. R. C. Lewontin, *Evol. Biol.* **6**, 381 (1972).
7. B. Cohen *et al.*, *DHEW Publ. No. (PHS) 80-1664* (National Center for Health Statistics, Department of Health, Education, and Welfare, Hyattsville, MD, 1980).
8. Laboratory Division, Federal Bureau of Investigation, *VNTR Population Data: A Worldwide Study*, vols. 1 to 4 (Forensic Science Research and Training Center, Quantico, VA, 1993).
9. R. Chakraborty, in *Modern Human Genetics: A Centennial Tribute to J. B. S. Haldane*, P. P. Majumder, Ed. (Plenum, New York, in press).
10. N. E. Morton, A. Collins, I. Balazs, *Proc. Natl. Acad. Sci. U.S.A.* **90**, 1892 (1993).
11. R. Chakraborty and L. Jin, *Hum. Genet.* **88**, 267 (1992).
12. R. C. Lewontin and D. L. Hartl, *Science* **255**, 1054 (1992).
13. R. Deka, R. Chakraborty, R. E. Ferrell, *Genomics* **11**, 83 (1992); R. Deka *et al.*, *Am. J. Hum. Genet.* **51**, 1325 (1992); R. Chakraborty *et al.*, *Am. J. Hum. Biol.* **4**, 387 (1992).

Interdisciplinary Communication

Jan A. Witkowski suggests (Letters, 9 Apr., p. 147) that although "sociological studies of the way scientists work and how what is regarded as scientific knowledge comes into being are interesting," the "convoluted language" of the packaging self-defeatingly conceals the lessons from scientists; he thus urges sociologists of science to "write more intelligibly." Such a line of reasoning highlights the double standard emerging from Western scientific positivism. It is inevitable that as the problems get more complex so will the language that tries to define them; the concomitance is not the doing of any one group of academicians but is rather an almost necessary consequence of any expanding knowledge base, including that of natural science. Thus, while we may respect the basic postmodern lesson that one's discipline does not exist in a vacuum (something Witkowski himself even does), it remains only historical irony that we still ask others to adapt to us and the subculture where our brand of knowledge feels comfortable. It is *everyone's* responsibility to improve interdisciplinary communication, something that starts and ends with willingness, plenty of patience, and an open mind.

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Evolutionary Relationships

I enjoyed the Random Samples item (16 Apr., p. 295) about the wonderful report by Mitchell Sogin and his colleagues (16 Apr., p. 340) that defines the animal-fungal connection. However, I must carp about the use of the now-outmoded "five-kingdoms" graphic showing evolutionary relationships among lifeforms. Although that view still pervades many textbooks, recent molecular phylogenetic analyses have proved it fundamentally wrong (*1*). "Monera" is not a single relatedness group, but two: Bacteria (formerly eubacteria) and Archaea (formerly archaebacteria), as different from one another as either is from eucaryotes. The eucaryotic *nuclear* line of descent (Eucarya) is not derived from either of the procaryotic groups. Rather, it is as old as either of the other lineages. The incorrect portrayal of these relationships is a step back in the presentation of the remarkable advances that have recently been made in our understanding of biological evolution.

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References

1. C. Woese *et al.*, *Proc. Natl. Acad. Sci. U.S.A.* **87**, 4576 (1990).