Scientific Misconduct Investigations: Who Should Conduct Them?

David P. Hamilton's discussion of the Office of Scientific Integrity (OSI) (News & Comment, 6 Sept., p. 1084) implies that scientists have the dubious prospect of having either OSI or the Office of the Inspector General conduct investigations of scientific misconduct.

I suggest that the investigative function of OSI be lodged within a freestanding, nonprofit foundation that could be called on by universities to perform objective, credible, timely, professional, due process inquiries. A roster of available external experts would conduct such investigations; the results would be reported to the university and, if federal funds were involved, would be available to the government. The government would then be out of the misconduct investigatory business, which seems a positive goal. It could maintain its role with regard to sanctions if it appeared that institutionally applied sanctions were insufficient.

Resolution of this issue requires social action so that Congress recognizes it as a useful advance. Conceivably, such a foundation could be monitored by the National Academy of Sciences. Many scientific organizations have not yet recognized that public discussion is necessary with respect to just what the nature of "scientific misconduct is," just what the appropriate means of investigation are, and just what the appropriate sanctions are. If we don't do it, it will be done for us or to us.

DONALD F. KLEIN
College of Physicians & Surgeons of Columbia University, and
*New York State Psychiatric Institute,
722 West 168th Street,
New York, NY 10032*

Phylogeny and Diversity

Terry L. Erwin's Perspective (16 Aug., p. 750) is a welcome call for the involvement of phylogenetic systematics in biodiversity studies, but I question whether "phylogenetic theory" can make the sort of predictions that he suggests. If we have some reason to expect that monotypic lineages are all living fossils, evolutionary dead ends, or other unregenerate life forms, then perhaps we should place a higher priority on saving more speciose groups. There is, however, no strictly phylogenetic theory that makes this prediction. Extinction probabilities, if they can be estimated at all, appear to be functions of population size, geographic range, and similar parameters, but not of phylogenetic branching order. Furthermore, there is no aspect of evolutionary theory that allows us to predict which lineages will speciate in the future, much less where the next adaptive radiation will come from. These processes are contingent upon the circumstances of history.

Even if we cannot peer into the future, phylogeny still provides us with a way to establish the present value of species. The close relationship between taxonomic and genetic diversity is clearly expressed by a phylogenetic tree. If we consider that each species has diverged genetically from its relatives by an amount roughly proportional to the time since their common ancestor, branch lengths scaled to observed genetic divergence between species provide a quantitative measure of diversity within a clade. From this perspective, old, monotypic lineages often make large contributions to diversity and so would be accorded high priorities in conservation decisions.

Phylogenetic systematics in combination with conservation genetics thus provide a critical framework for understanding diversity. The imperative to preserve diversity