Letters

NIH Fraud Guidelines

The editorial "Fraud in science" by Daniel E. Koshland, Jr. (9 Jan., p. 141), states that the National Institutes of Health procedures for dealing with possible misconduct in science (*1*) "seem admirable and appropriate." We take exception to two recommendations made by NIH for awardee institutions, first, to item (b), "protecting the privacy of those who in good faith report apparent misconduct" (*1*, p. 24) and, second, to item (i), "if the possible misconduct is not substantiated undertaking diligent efforts where appropriate to restore the reputation of those under investigation" (*1*, p. 24).

Concerning item (b), we believe this policy is morally wrong and contravenes the rights a citizen of the United States might reasonably expect. We know of no civil court in which an individual is prevented from knowing the identity of his accuser. This should not be the policy of universities, which are supposed to be centers of enlightenment and education. The policy suggests that anonymous informants should be condoned and that, by providing the descriptor "in good faith," some university official will have the wisdom and background to judge whether the individual is acting in good faith.

We believe the following. Those of us who have made a career in science value our integrity and that of our confreres above any other single trait; we rigorously apply this trait to our own research and in evaluating that of our peers; we have a moral obligation to report any suspected errors or suspected dishonesty to the individual whom we suspect, and then, if our doubts are not assuaged, to university officials. We must as a community demand the most rigorous and correct behavior of ourselves and of our peers; at no time should we hide behind a cloak of anonymity, and in no way should NIH or the university encourage or condone such an action.

Point (i) is equally troubling because it implies that regardless of efforts to protect an individual who has been accused, the conduct of an investigation will become general knowledge and will damage the individual during its course. There should be no need to "restore the reputation" of one who is unjustly accused, because in this nation we are innocent until proven guilty. If an investigation is conducted correctly and responsibly, then this recommendation is superfluous.

The federal regulations make no recommendations about how an institution is to carry out its inquiries. If we accept the federal role model, the local institutions will appoint a "Misconduct Policy Officer" or MPO. In considering this we note with amusement that the federal official designated as chief MPO is the Deputy Director for Extramural Research and Training, or DDERT. We do not believe the university should appoint a comparable official whose role will be to deal with "dedirt." Rather, we believe any alleged instance of misconduct should be considered by a panel of peers who are impressed with the solemnity of their task and who have access, as does the accused individual, to all facts and all persons involved in the process of accusation.

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REFERENCES

1. *NIH Guide Grants Contracts*, **15** (No. 11) (18 July 1986).

Response: The National Institutes of Health is appreciative of comments by Koshland and by Rosen and Hoffman. The document "Policies and procedures for dealing with possible misconduct in science" published in the *NIH Guide for Grants and Contracts* (18 July 1986) represents interim policies. As stated in the *Guide* (p. 23), the section on awardee responsibilities will be published separately in the *Federal Register* as a notice of proposed rulemaking. The date of publication will be printed in the *Guide*, and we invite comments from others in the scientific community.

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SSC and SDI

I have been following the public debate about the Reagan Administration's proposal to build a 52-mile proton accelerator with considerable interest and some bemusement. In particular, I am more than a little surprised that essentially all of the debate has centered around issues of "big versus little science." Little has been said regarding the Administration's real motives in pursuing such a project.

Given Reagan's history of funding for fundamental research (and other indications that he is not above a certain duplicity at the hands of the "military men"), why have no questions been raised when he announces that unless we build this mammoth accelerator, we will fall irrevocably behind in the subatomic particle race, and when he emphasizes that the results from experiments using the accelerator would have no practical applications?

To my eye, this is pure smoke screen. It seems obvious that any funding for the Superconducting Super Collider is further funding for the Strategic Defense Initiative. The very construction and testing of such an accelerator would seem to involve perfecting technologies that are directly applicable to space weaponry.

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Late Cretaceous Atmospheric Oxygen

An additional note should be added to the comments by Cisowski and Fuller and Argyle (Letters, 17 Oct. 1986, p. 261) on the remarkable finding by Wolbach *et al.* (Reports, 11 Oct. 1985, p. 167) of a Cretaceous-Tertiary soot layer. The amount of reduced carbon sequestered in Middle to Upper Cretaceous organic-rich shales (*1*) might have been balanced during the Cretaceous by a surplus of photosynthesis-derived atmospheric oxygen. For calculation purposes, we make the conservative estimates that (i) 7.22×10^7 square kilometers of the Cretaceous sea floor received substantial black shale deposition (equal to about 20% of the present area of the sea floor); (ii) the average thickness of these organic-rich sediments is 40 meters; and (iii) the average total organic carbon of these sediments is 1.0%. We also assume that the remainder of the global carbon cycle was unable to absorb the surplus oxygen. When one uses these approximations, the net increment to the atmospheric oxygen reservoir is 1.54×10^{20} grams, or about a 3% shift in the composition of the atmosphere toward oxygen. Normal atmospheric oxygen content (about 21%) is generally assumed to have been near present atmospheric levels for at least the last 100 million years (*2*). Watson *et al.* (*3*) show that even wet vegetation is highly flammable when atmospheric oxygen levels reach 25%. An increase in atmospheric O_2 levels to 24% during the Late Cretaceous would have dramatically increased the flammability of moisture-containing vegetation and the sustainability of wildfires and extended the maximum possible distance from