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LETTERS

ORI and Misconduct Investigations

The strong public support of biomedical research has been tested at times by serious allegations of misconduct by scientists conducting this critical research. These accusations of cheating (fabricating data, falsifying results, plagiarizing, and other dishonest types of behavior in conducting research) resulted in the Public Health Service (PHS) establishing the Office of Research Integrity to deal with these issues.

The Office of Research Integrity (ORI) was established independent of the agencies that fund research and further strengthened by federal law so that it could deal independently and fairly with the myriad of issues, allegations, and concerns about the integrity of research funded by the PHS.

Christopher Anderson's 7 January article (News & Comment, p. 20) discusses criticisms of the office, mostly due to the results of the Gallo and Popovic cases. Although these cases enjoyed considerable notoriety, they are only 2 of the 22 cases in which ORI has found misconduct, 16 of which have been sustained. Even more important (to put these cases in context) is the fact that it was ORI that established the hearing process in response to concerns of the scientific community. While losing is never pleasant, it would be difficult to believe in an adjudication process that decided all cases as "guilty as charged."

Many believe that we should not have pursued these cases. Had we not, the allegations as well as the scientific and legal issues raised in this process would not have been aired. The only way to deal with issues and problems is to confront them and bring them to resolution. I think the results of these cases are most significant in that they crystallized a number of issues, especially materiality and intent. We will be dealing with these issues in a number of ways, most notably through the new, statutorily mandated Commission on Research Integrity that will be fully operational in the near future and through the public rule-making process.

My chief concern about the Gallo and Popovic cases is that the media focus on them tended to obscure the broader, and probably more important, ORI mandate to see that all universities and other research institutions have in place an appropriate process to deal with accusations of misconduct in research funded by the PHS. The size and scope of the research effort make it critical that each institution be prepared to deal properly and effectively with such issues. Furthermore, those actually conducting research at individual institutions must take the lead in fostering integrity in research and dealing with misconduct. Within the limits of its budget, ORI supplements these "local" efforts with its own outreach and educational efforts, including an annual report and quarterly newsletter.

Neither ORI nor the scientific community can be thin-skinned or reluctant to deal with critical issues in a rational, straightforward manner. ORI will attempt to be as open, as ready for the rough-and-tumble of discussion and debate, and as fair to scientists and the public as possible. We seek to win no popularity contests with any part of the broad communities with which we deal. We do seek fairness and full public airing of issues and problems.

Lyle W. Bivens
Director, Office of Research Integrity,
Public Health Service,
Department of Health and Human Services,
Rockville, MD 20852

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Incorporating Minorities in Science

In the article by Karen Fox "A guide to minority aid from scientific societies" (Minorities in Science, 12 Nov., p. 1134), the American Society for Biochemistry and Molecular Biology (ASBMB) was cited as one of several societies that "offer no programs for minorities," thus characterizing it as one that does "the least . . . for minority students and scientists." These statements are incorrect. The ASBMB Council has been consistent in its support and generous in its allocation of resources for such efforts.

First, our standing Committee for Equal Opportunities for Minority Groups has sponsored programs and workshops at national meetings for about two decades. Second, 10 years ago, ASBMB pioneered the High School Teacher Research Fellowship Program, now also offered by other professional organizations. This program has as one of its top priorities the participation of teachers who are members of a minority group, or whose classes are largely made up of minority students. Up to 20% of the participants fit this description. Third, ASBMB organized groups of minority high school teachers in cities where its national meetings were held (some 80 teachers total) and provided 3 days of activities including

lectures, workshops, receptions, and discussion groups. These teachers have been entering the Research Fellowship Program as regular applicants. Lastly, ASBMB has already met with other societies to discuss our activities and programs within the Federation of American Societies for Experimental Biology (FASEB).

The point should also be made that over the past 2 years ASBMB has taken a new approach in its support for members of minority groups. Special targeted programs, of the type highlighted in the article, can "marginalize" efforts and isolate the groups for which they are intended. Instead, ASBMB has gathered committees together toward the goal of making minorities and women full and equal participants in the society. We are taking a leadership position by promoting and sponsoring activities to incorporate, not isolate, members of minority groups.

*David L. Brautigan**
Martin Gellert†
American Society for Biochemistry and Molecular Biology, 9650 Rockville Pike, Bethesda, MD 20814

*Chairman, Human Resources Committee
†President, ASBMB

Response: Incorrect information about the ASBMB in Fox's article was provided to *Science* by an ASBMB representative. We regret the error.—***Eds.***

Kenneth Olden's article "Bringing science back to the neighborhood" (Minorities in Science, 12 Nov., p. 1116) focuses on the fraction of participants in the National Institutes of Health's (NIH's) minority programs who enroll in medical school and become practicing physicians rather than pursuing Ph.D. degrees and research careers. Olden refers (although not by name) to the Minority Biomedical Research Support (MBRS) and Minority Access to Research Careers (MARC) programs and states that, according to NIH data, two-thirds of the students in these programs follow the path to medical school. One can, however, view the data differently. The data from NIH (*1*) also show that, in the 5-year period from 1985 to 1989, at least 132 African American or Hispanic former participants in the MBRS and MARC programs earned the Ph.D. degree in either chemistry or the biological sciences. When one considers that the nationwide total number of African American and Hispanic Ph.D. degree recipients in these fields for the same period was 576, it is apparent that these programs supported almost one-fourth (*2*) of these scientists at some point in their undergraduate or graduate training. It is doubtful that the minority programs of any other agency, government or private, could claim better results.

To be sure, we should continue working to encourage a larger fraction of MBRS and MARC students to pursue research, rather than medical careers, and we should recruit students who express this objective. However, once they are admitted to the programs, students cannot be forced to follow through. Exposing these students to the research endeavor reveals to them both its advantages and disadvantages. Thus, as pointed out in Koshland's accompanying editorial (12 Nov., p. 971) and in Elizabeth Culotta's article "Finding—and keeping—minority professors" (12 Nov., p. 1091), the tight job and grant situation in academic science as well as the professional and social problems encountered by minority professors will steer some of the research-oriented students away to medicine and other fields.

In spite of these influences, the MBRS and MARC programs are clearly having a positive impact on the production of Ph.D. minority research scientists.

Robert M. Hoyte
MBRS Program Director,
State University of New York,
College at Old Westbury,
Box 210,
Old Westbury, NY 11568

Notes

1. Data from the Office of Program Analysis, National Institute of General Medical Sciences, and the National Academy of Sciences, Doctoral Records File.
2. Officials at the National Institute of General Medical Sciences indicate that because social security number data matched to the National Academy of Sciences doctoral record file is incomplete for early participants in the programs, this fraction is an underestimate.

I congratulate *Science* for its 1992 and 1993 issues on Minorities in Science, as I believe that this is the most challenging and important issue facing the biomedical community, now and in the future. The issues addressed, the individuals featured, and the general commentary on this problem were commendably appropriate.

I would like, however, to emphasize the lack of priority of these issues at some of our major institutions (often research universities), most often demonstrated by the lack of recognition of faculty (both tenured and nontenured) who are committed, devoted, and dedicated to these efforts. Although the efforts are not made *for* recognition, very often they act as an impediment to an individual's career, thereby serving as a disincentive. Most certainly under these conditions, the problem will not be solved, let alone even addressed.

The disappointing aspect of this is twofold. First it is a fairly well-recognized occurrence and therefore represents an issue that should be addressed. Second, it could be addressed in a straightforward manner if the traditional, change-resistant system in place at our institutions of higher learning were willing to make a change. The system needs to recognize that this is important for our faculty to do, especially when there are those who choose to make the major and important commitment that it takes to address this issue. As such, the presidents (who set the universities' mandates) and the provosts or vice presidents (in charge of academic affairs) *must* make the academic community, particularly the deans, chairs, and faculty, aware of the importance of this issue by assurances that these efforts will indeed "count" in promotions and other forms of advancement and recognition within the academic system.

Thomas D. Landefeld
Department of Pharmacology,
University of Michigan,
Ann Arbor, MI 48109–0626

Daniel E. Koshland Jr.'s editorial "Minorities in science" (12 Nov., p. 971) makes two major suggestions: (i) that only a goal of a color-blind recruitment policy for science is ultimately morally justifiable and (ii) that the scientific community will benefit from increased minority representation primarily through an extension of the talent pool.

There is more to be said about the true activity and nature of the scientific community. Science is about vision and direction as much as it is about talent. Individuals who belong to cultural minorities possess slightly different concepts of the world, and these different concepts bring a valuable diversity into the vision of the scientific community.

We must integrate the potential critiques and novel perspectives of those individuals who are members of "marginalized voices" in American society: African Americans, feminists, homosexuals, and others. A diversity of cultural identities in science is invaluable in producing innovative and reliable knowledge.

Thomas Cameron
Baird Research Group,
Department of Chemistry,
Cornell University,
Ithaca, NY 14853

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Triple Repeat DNA as a Highly Mutable Regulatory Mechanism

In a recent Perspective, "Molecular genetics of neurological diseases" (29 Oct., p. 674), J. B. Martin discusses several human diseases that develop when certain variable-length, repeated trinucleotide DNA sequences exceed their normal range, noting that disease severity and age of onset are correlated with the length of the triple repeat. In effect, the repeat length seems to regulate the expression of a disease state. Possibly this variation in repeat length has no effect unless a critical threshold is exceeded, with disease as its only consequence. But variation *within* the normal range might also be meaningful. What if the length of a triple repeat were correlated with the penetrance of some normal phenotypic trait? Could these diseases be revealing, in deleteriously exaggerated form, the expression of an unsuspected but normally advantageous regulatory mechanism?

If triple repeat length were to regulate the quantitative expression of an associated gene, then spontaneous changes in sequence length (by whatever process this