

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Science serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by the AAAS or the institutions with which the authors are affiliated.

Publisher: WILLIAM D. CAREY

Editor: DANIEL E. KOSHLAND, JR.

Deputy Editors

PHILIP H. ABELSON (*Engineering and Applied Sciences*), JOHN I. BRAUMAN (*Physical Sciences*), GARDNER LINDZEY (*Social Sciences*)

Editorial Board

PHILIP W. ANDERSON, DAVID BALTIMORE, ANSLEY J. COALE, JOSEPH L. GOLDSTEIN, LEON KNOPOFF, SEYMOUR LIPSET, WALTER MASSEY, OLIVER E. NELSON, ALLEN NEWELL, RUTH PATRICK, VERA C. RUBIN, HOWARD E. SIMMONS, SOLOMON H. SNYDER, ROBERT M. SOLOW

Board of Reviewing Editors

JAMES P. ALLISON, LUIS W. ALVAREZ, DON L. ANDERSON, KENNETH J. ARROW, C. PAUL BIANCHI, ELIZABETH H. BLACKBURN, FLOYD E. BLOOM, MICHAEL S. BROWN, NINA V. FEDEROFF, GARY FELSENFELD, DOUGLAS J. FUTUYMA, THEODORE H. GEBALLE, STEPHEN P. GOFF, PATRICIA S. GOLDMAN-RAKIC, RICHARD M. HELD, GLORIA HEPPNER, ERIC F. JOHNSON, KONRAD B. KRAUSKOPF, PAUL E. LACY, JOSEPH B. MARTIN, JOHN C. MCGIFF, MORTIMER MISHKIN, JOHN S. PEARSE, YESHAYAU POCKER, FREDERIC M. RICHARDS, JAMES E. ROTHMAN, RONALD H. SCHWARTZ, OTTO T. SOLBRIG, ROBERT T. N. TJIAN, VIRGINIA TRIMBLE, GEERAT J. VERMEIJ, MARTIN G. WEIGERT, GEORGE M. WHITESIDES, WILLIAM B. WOOD, HARRIET ZUCKERMAN

Editorial Staff

Managing Editor: PATRICIA A. MORGAN
Assistant Managing Editors: NANCY J. HARTNAGEL, JOHN E. RINGLE
Production Editor: ELLEN E. MURPHY
News Editor: BARBARA J. CULLITON
News and Comment: COLIN NORMAN (deputy editor), MARK H. CRAWFORD, CONSTANCE HOLDEN, ELIOT MARSHALL, R. JEFFREY SMITH, MARJORIE SUN, JOHN WALSH
European Correspondent: DAVID DICKSON
Research News: ROGER LEWIN (deputy editor), RICHARD A. KERR, GINA KOLATA, JEAN L. MARX, ARTHUR L. ROBINSON, M. MITCHELL WALDROP
Administrative Assistant, News: SCHERRAINE MACK; **Editorial Assistant, News:** FANNIE GROOM
Senior Editors: ELEANORE BUTZ, RUTH KULSTAD
Associate Editors: MARTHA COLLINS, SYLVIA EBERHART, CAITILIN GORDON, WILLIAM GREAVES, BARBARA JASNY, STEPHEN KEPPEL, EDITH MEYERS, LOIS SCHMITT
Assistant Editor: LISA MCCULLOUGH
Book Reviews: KATHERINE LIVINGSTON, **Editor:** LINDA HEISERMAN, JANET KEGG
Letters Editor: CHRISTINE GILBERT
Contributing Editor: RUTH L. GUYER
Production: JOHN BAKER, HOLLY BISHOP, KATHLEEN COSIMANO, ELEANOR WARNER, ISABELLA BOULDIN, SHARON RYAN, BEVERLY SHIELDS
Covers, Reprints, and Permissions: GRAYCE FINGER, **Editor:** GERALDINE CRUMP, CORRINE HARRIS
Guide to Scientific Instruments: RICHARD G. SOMMER
Manuscript System Analyst: WILLIAM CARTER
EDITORIAL CORRESPONDENCE: 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Telephone: 202-467-4400. For "Information for Contributors" see page xi, *Science*, 28 June 1985.

Business Staff

Chief Business Officer: WILLIAM M. MILLER III
Business Manager: HANS NUSSBAUM
Assistant to Chief Business Officer: ROSE LOWERY
Business Staff Supervisor: DEBORAH JEAN RIVERA
Membership Recruitment: GWENDOLYN HUDDLE
Member and Subscription Records: ANN RAGLAND

Advertising Representatives

Director: EARL J. SCHERAGO
Production Manager: DONNA RIVERA
Advertising Sales Manager: RICHARD L. CHARLES
Marketing Manager: HERBERT L. BURKLUND
Sales: NEW YORK, N.Y. 10036: J. Kevin Henebry, 1515 Broadway (212-730-1050); SCOTCH PLAINS, N.J. 07076: C. Richard Callis, 12 Unami Lane (201-889-4873); CHICAGO, ILL. 60611: Jack Ryan, Room 2107, 919 N. Michigan Ave. (312-337-4973); BEVERLY HILLS, CALIF. 90211: Winn Nance, 111 N. La Cienega Blvd. (213-657-2772); SAN JOSE, CALIF. 95112: Bob Brindley, 310 S. 16 St. (408-998-4690); DORSET, VT. 05251: Fred W. Dieffenbach, Kent Hill Rd. (802-867-5581).
ADVERTISING CORRESPONDENCE: Tenth floor, 1515 Broadway, New York 10036 (212-730-1050).

Modest Proposals for the Granting System

I have already commented on the importance of peer review and the fact that reviewers are, in some cases, blamed for problems that are outside their control. Now I want to suggest some ways in which the granting system might be improved. I will focus on the National Institutes of Health and examine other agencies at a later time.

One problem at NIH which has raised alarm is the high priority rating that is required for funding. Increased competition for funding is a fact, but priority scores are not always a true indicator of the level of competition because there is "priority score inflation," an infectious disease akin to grade inflation. Between 1975 and 1985, for example, the average percentage of grants funded (per total grant applications) has dropped from 46 to 35 percent. Yet, during that same period, the priority score required for funding has changed even more abruptly in some reviewing panels. This apparently has been caused by members of these panels who attempt to outguess the system and help their fellow scientists. In the long run such efforts are counter-productive because administrators are forced to normalize priority scores to obtain correct readings. The sooner the peer panels return to realistic evaluations, the better. A backup system in which administrators or councils can decide to fund a grant that receives a score just below the cut-off line—because it is the sole support of an investigator—and deny the *n*th grant of a more distinguished individual, with a score just above the cut-off line, has been used in some institutes and should be extended, with caution.

The fraction of the total research funding that is assigned to overhead costs deserves a systematic study. The increase in overhead is not alarming per se because the average figure for overhead is 31 percent of direct costs, but it has been increasing at a rate of 0.5 percent per year. One of the built-in dangers here is the competition among university administrators to indulge in "creative financing" for their own institutions. Busy scientists, not wanting to get involved in such arrangements, frequently go along, assuming that since "University X is getting 90 percent overhead—why shouldn't we?" Moreover, some outside agency that has little knowledge of the specific research or the appropriate charges is involved in negotiating with campus administrators. (The Defense Department evaluates overhead for NIH in certain areas of the country, for example.) An examination of this system by an independent team of accountants might reveal that a national average overhead cost would be fair, with some allowances made for special circumstances.

Another possible improvement would be to emphasize the track record of a seasoned investigator in preference to the evaluation of the specific proposal. The chance that an investigator will lose grant support during the first three renewal periods is 50 percent. The chance of losing support after the third renewal is less than 10 percent. Focusing on track records and using a short grant form might reduce paperwork and be a more humane and efficient system for peer evaluation of proven investigators.

Finally, there is the difficult question of salary. It is the most vexing single item to NIH officials. Any drastic reduction in salaries would threaten the viability of the smaller institutions, yet salaries of principal investigators are increasingly eroding research dollars. Peer reviewers are told that they have no jurisdiction over salaries, but inflated salaries should be their concern. Should we not establish more rational guidelines and apply them gradually over the years to lessen withdrawal pains?

Only with constant vigilance will our granting system maintain the respect that it has earned and deserves from the recipients of its decisions and the outsiders who ask that scientists run their affairs well.

—DANIEL E. KOSHLAND, JR.