CONTACT SCIENCE

Letters to the Editor
May be submitted via e-mail (at science_letters @aaas.org), fax (202-789-4669), or regular mail (*Science*, 1200 New York Avenue, NW, Washington, DC 20005, USA). Letters are not routinely acknowledged. Full addresses, signatures, and daytime phone numbers should be included. Letters should be brief (300 words or less) and may be edited for clarity or space. They may appear in print and/or on the Internet. Letter writers are not consulted before publication.

Subscription Services
For change of address, missing issues, new orders and renewals, and payment questions, please contact AAAS at Danbury, CT: 800-731-4939 or Washington, DC: 202-326-6417, FAX 202-842-1065. Mailing addresses: AAAS, P.O. Box 1811, Danbury, CT 06813 or AAAS Member Services, 1200 New York Avenue, NW, Washington, DC 20005 • Other AAAS Programs: 202-326-6400

Member Benefit Contacts
For Credit Card: MBNA 1-800-847-7378; Car Rentals: Hertz 1-800-654-2200 CDP#343457, Dollar 1-800-800-4000 #AA1115; AAAS Travels: Betchart Expeditions 1-800-252-4910; Life Insurance: Seabury & Smith 1-800-424-9883; Other Benefits: AAAS Member Services 1-202-326-6417.

Reprints
Ordering/Billing/Status 800-407-9190; **Corrections** 202-326-6501 **Permissions** 202-326-7074, FAX 202-682-0816

Internet Addresses
science_editors@aaas.org (for general editorial queries); science_news@aaas.org (for news queries); science_letters@aaas.org (for letters to the editor); science_reviews@aaas.org (for returning manuscript reviews); science_bookrevs@aaas.org (for book review queries); science@science-int.co.uk (for the Europe Office); membership@aaas.org (for member services); science_classifieds@aaas.org (for submitting classified advertisements); science_advertising@aaas.org (for product advertising)

Information for Contributors
See pages 108 and 109 of the 2 January 1998 issue or access www.sciencemag.org/misc/con-info.shtml.

Editorial & News Contacts
North America 1200 New York Avenue, NW, Washington, DC 20005 Editorial: 202-326-6501, FAX 202-289-7562 News: 202-326-6500, FAX 202-371-9227 • Bureaus: Berkeley, CA: 510-841-1154, FAX 510-841-6339, San Diego, CA: 760-942-3252, FAX 760-942-4979, Chicago, IL: 312-360-1227, FAX 312-360-0537 **Europe** Headquarters:14 George IV Street, Cambridge, UK CB2 1HH; (44) 1223-302067, FAX (44) 1223-302068 Paris Correspondent: (33) 1-49-29-09-01, FAX (33) 1-49-29-09-00 **Asia** News Bureau: Dennis Normile, (81) 3-3335-9925, FAX (81) 3-3335-4898; dnormile@twics.com • Japan Office: Asca Corporation, Eiko Ishioka, Fusako Tamura, 1-8-13, Hirano-cho, Chuo-ku, Osaka-shi, Osaka, 541 Japan; (81) 6-202-6272, FAX (81) 6-202-6271; asca@os.gulf.or.jp • China Office: Hao Xin, (86) 10-6255-9478; science@public3.bta.net.cn

Publishing Controversial Research

Linda J. Miller and Floyd E. Bloom

Even the most fundamental research can be a double-edged sword—on one hand possessing the potential for immense human benefit, and on the other creating ethical dilemmas for those who choose to fund such work. In today's rapid reporting environment, the public is often sensitized to the possible ethical implications of some early research results long before the data have been subjected to rigorous peer review. For example, in the early 1990s there was great enthusiasm about the potential benefits of human embryonic stem cell lines, yet there was little compelling evidence that such lines could even be created. Just the thought of research on human embryonic tissue stirred such intense debate in the United States that federal funding for such research was prohibited. Consequently, investigators who believed in the potential benefits of such work turned to other funding sources, often private and proprietary, to fill the gap.

[P]ublication of ethically controversial research can constructively catalyze public debate.

A paper in this issue of *Science* (p. 1145) and one in the upcoming issue of the *Proceedings of the National Academy of Sciences* report early results of nonfederally funded stem cell research. Using different techniques, two research groups have successfully cultured human embryonic stem cells, creating a resource that could potentially lead to tissue replacement treatments for many devastating and currently fatal diseases. The embryonic stem cells described in the *Science* report were derived from donated in vitro fertilization material, an ethically controversial source that could compromise or taint whatever benefits they might eventually offer. These early research results have passed peer review and are now available for public scrutiny [see also the Perspective (p. 1061) and News story (p. 1014) in this issue]

Is our decision to publish this work harmful? Should journals draw a moral line in the sand? *Science* believes that the answer to these questions is no. International journals cannot judge data as unsuitable for publication because of decisions by agencies that regulate and fund research. Although voluntary moratoriums by scientific communities may allow politicians and the public to assess real and perceived dangers before regulatory decisions are made,* the international political community is rarely unified in its approach to the regulation of controversial research. Because *Science* receives submissions from around the world, we must look for global selection criteria. For this reason, we only publish papers containing compelling results that have passed peer review and are in compliance with the Helsinki accords on human rights and with other safeguards for responsible publication.

Science believes that publication of ethically controversial research can constructively catalyze public debate and can play a positive role in maintaining an open atmosphere for dissemination and discussion. The open airing of multiple viewpoints can lead to a scientific policy that addresses the concerns of all constituencies. By encouraging the publication of valid research regardless of its qualification for public funding, journals can keep the public and body politic informed about research progress. Armed with factual knowledge, subsequent debates can lead to equally informed and scientifically based decisions regarding the steps needed to ensure scientific quality, public safety, and ethical integrity.

In the case of these papers, complex intellectual, medical and economic issues have intertwined successfully. The economic goals of private funding sources did not prevent this research from becoming available for public scrutiny. One can imagine future scenarios where this might not be the case. If private funding became tight, the ensuing research could become so constrained that it never receives scientific verification by peer review, publication, and repetition. Such potentially beneficial research would proceed without public scrutiny, and thus would fail to establish the reality of the perceived benefits and risks. For these reasons, we believe that it is time to reexamine the U.S. policy on embryonic research. In the meantime, *Science* will continue to publish research that can legally be performed even if it cannot be funded by a country's granting agencies. Restricting the publication opportunities of those involved in ethically controversial research is not in the public's best interest. Peer review with public purview is the only choice we have.

*P. Berg and M. Singer, *Science* **282**, 413 (1998)