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EDITORIAL

Ethics: Sending Out the Message

It seems ironic that it took a federal requirement to stimulate formal instruction in ethical conduct in U.S. graduate science training programs.

After all, the ethical conduct of research is central to the integrity of universities, where research and graduate education are inseparable. Yet a requirement for such instruction as a condition of receipt of National Institutes of Health institutional grant funds* may have focused attention on ethical issues more effectively than our own degree programs and more forcefully than a small but steady stream of instances in which researchers violated the norms of professional conduct. These instances range from the spectacular (mouse-painting or outright concoction of data) to the mundane (duplicate publication or guest authorship).

Many researchers feel that the attention devoted to cases of scientific misconduct is disproportionate to their importance and rate of occurrence. But the seriousness of these instances when they do occur, and institutions' often inadequate responses to them, have generated public and congressional skepticism about the ability—and willingness—of the academic community to set and enforce ethical standards. These instances can also endanger morale and foster cynicism among those we are educating.

The relationship between the formal academic curriculum and the informal curriculum that students absorb in hallways, laboratories, and hospitals bears careful examination. What does the informal curriculum teach students in your laboratory or university? What messages do students pick up about authorship and publication practices? How do they see mentors reconcile a desire for a hefty publication record with admonitions not to engage in "salami science" or divide work into "least publishable units"? Do students observe professors maintaining confidentiality in reviewing grant applications? What sort of example do you set? Most important, do the rules apply to everyone in your environment or only to the students?

Somehow it has come to seem unfashionable, almost priggish, to talk about concepts of honor, duty, and obligation. At the same time, increasing funding pressures have created perceived incentives to behave unethically or unprofessionally. What are the boundaries of ethical conduct, and whose job is it to set them and make them stick? Self-policing is a difficult task that few professions seem to have mastered. But the fact that it is difficult doesn't mean that our community shouldn't try. Each of us has the obligation to confront ethical issues and their implications for our personal conduct. Each of us also has the duty to address the ethical aspects of our work with colleagues and students. Institutions have a responsibilty to articulate standards for ethical conduct and to see that they are put into practice. These standards should be higher than the merely legal; they should define professional standards of behavior. The goal should be to provide guidance to the well-intentioned—those who may want to do the right thing but who genuinely do not know what is right in a complex situation or how to determine it.

Collaborators should follow the guidelines of leading journals on assignment of authorship. Senior researchers have a special responsibility for seeing that credit is assigned appropriately. Salvador Luria and Max Delbruck set an example well worth emulating in a footnote to their famous 1943 paper.† It read, "Theory by M.D., experiments by S.E.L." Finally, researchers and their universities must accept responsibility for creating an environment in which ethical issues are ordinary topics of conversation and in which ethical conduct is commonplace among leaders and expected of all.

Action from Washington should not be necessary for universities to take these issues seriously or to ensure that their students and trainees learn about ethical conduct as an integral part of their professional education. We must articulate and observe ethical standards in order to avoid an erosion of public trust and the potential for more onerous regulation. It also happens to be the right thing to do.

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*"Requirement for Programs on the Responsible Conduct of Research in National Research Service Award Institutional Training Programs," *NIH Guide for Grants and Contracts* **18**, 45 (1989). A more recent notice appears in *ibid.* **23**, 23 (1994). † S. Luria and M. Delbruck, *Genetics* **28**, 491 (1943).