

# THE LAST WORD

by Sheldon Krinsky

## ACADEMICS IN BIOTECHNOLOGY

**T**he media coverage, congressional investigations, legal proceedings, and debates over academic-industry relations in biotechnology have skirted one of the field's most important issues. Discussions have focused on: the effect of industry contracts on the free exchange of scientific information; the commingling of funds; the diversion of faculty from teaching and advising; and the emphasis on applied and commercially lucrative research programs at the expense of fundamental science.

The sheer numbers of academic scientists involved in commercial projects or financial deals prompt another question, seldom asked: what will happen to the independence and objectivity of this segment of the scientific community, its ability to address even-handedly the social and environmental impacts of biotechnology?

To understand the significance of this, we have to recognize how science has emerged as a social resource. The public sector has become heavily dependent on scientific expertise to set public policy agendas—including health and safety regulations, priorities for allocating research dollars, and assessment of technological risk.

Scientists participate in a labyrinth of governmental advisory committees and disciplinary study panels. How do we insure their objectivity in these vital roles? The commercial affiliations of academic scientists who participate in the policy realm are rarely revealed to the public. In 1981 and 1982 the Recombinant DNA Advisory Committee (RAC) of the National Institutes of Health had four scientific members with relationships to the biotechnology industry that were not widely disclosed. During this period, the RAC made many important policy decisions leading to a relaxation of rules governing large-scale work with recombinant DNA molecules.

The recent Office of Technology Assessment (OTA) study, *Commercial Biotechnology*, argues that a scientific expert who consults for industry "may have a more objective view because he or she understands the research and development aspects of technology." The OTA also argues that it is advisable to drape a veil of secrecy over the commercial affiliation of a scientist testifying before a governmental body, since disclosure could result in bias against the individual's presentation.

The OTA confuses objectivity with eclecticism. There are many advantages in having faculty link up with commercial activities, both to the individuals and their institutions. But it is a serious mistake to claim that scientists' commercial affiliations enhance their objectivity about issues involving their financial interests. Just as important, scientists affiliated with both academia and industry are more likely to ignore a public interest role than their independent counterparts.

In 1969, for example, California public officials expressed dismay and frustration after their unsuccessful attempts to get experts to testify on behalf of the state in its half-billion-dollar damage suit against an oil company. The legal action was taken after a massive oil leak from an off-shore well polluted the Santa Barbara Channel. *Science*

reported that most petroleum engineers in academia did extensive consulting for oil companies and belonged to a *de facto* university-industry oil fraternity. The real tragedy here was the scarcity of academic experts free of financial ties to the industry, experts who could provide a disinterested analysis of an ecological disaster.

Academic biologists are flocking to the biotechnology industry in unprecedented number. Even if we remove conflicts of interests in the faculty-university-industry equation, the new values emphasizing biology for profit will slowly transform a disciplinary conscience, incrementally and without malice. It is very unusual for those with a stake in the financial outcome of a field to retain a public interest perspective that gives critical attention to the perversion of science in the search for markets.

A recent study on academic-industry connections at Tufts University begins to reveal the patterns of affiliation. The study drew on a data base of 350 scientists with commercial affiliations—a list compiled mainly from financial reports of 50 public biotechnology firms taken from a pool of 250 public and private firms. Some results:

- 62 scientists or 18% of the sample are members of the National Academy of Sciences. They represent 25% of the NAS membership in biochemistry, cellular and developmental biology, genetics, and medical genetics.
- 48 scientists or 14% of the sample served on NIH public advisory committees or study panels between 1983 and 1984.
- 223 scientists or 64% of the sample served as reviewers of proposals for the National Science Foundation between 1982 and 1983.

These figures represent lower bounds since our data cover just 20% of the total firms, and listings of scientific advisors to private firms are difficult to obtain. It is not unreasonable to extrapolate from the data that possibly over 50% of the NAS membership in the fields of biology are affiliated with the commercial sector. Ironically, it is the NAS on which the public sector so often depends for disinterested assessments of science and technology.

In view of these trends in the biological sciences, I have two modest recommendations. First, we should know, as a matter of public record, when scientists with commercial ties enter the realm of public policy. Second, we should make some effort to reward academic scientists who remain unaffiliated with the private sector, on the assumption that they represent a public resource. For example, non-affiliated academics should be favored for appointments to prestigious commissions and study panels. Non-affiliation should also be considered in competitive grants programs. Without some incentives to reverse scientists' tendencies to develop commercial ties, we risk the foreclosure of two important agendas: the social guidance of a technological revolution and the public confidence in scientific objectivity.

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