

about biotech from an ecological and social perspective—how biotech could affect native species and our food supply, agricultural systems and farm communities, and, more philosophically, how it reflects our treatment of nature.

Russ Hoyle's response in your pages ("Amicus Offers Up Disinformation and Distortion," *Bio/Technology* 11:666, June), a diatribe against *Amicus* and environmentalists as a whole, is filled with such unsubstantiated charges and *ad hominem* arguments (appealing to your readers' presumed biases rather than any specifics) that, to my dismay, he short-circuits any productive discussion. For example, he accuses our magazine's authors (only one of which was an environmental advocate) of reporting uncritically "everything Jeremy Rifkin says," yet Rifkin, one of the few critics of this burgeoning field, was not even quoted, anywhere. He also makes the unfounded accusation that *Amicus* is guilty of "regurgitus" of politically correct views, "the usual pre-masticated intellectually fashionable specimens." But where, I would love to know, is all this fashionable dining taking place?

Hoyle notes, correctly, that only a fraction of R & D projects result in marketable products. But because some *do* succeed, it is entirely appropriate that environmental journalist Dick Russell, in "*Miracle or Myth*," examined what is in the pipeline—especially when examining an industry that has promised the moon and delivered so little, and when that research has serious environmental implications and is partly underwritten by taxpayers. Russell's article questions industry claims that biotechnology is enabling us to decrease our dependence on agricultural chemicals and shows, in fact, that current pesticide company research and marketing will increase our chemical dependence. Hoyle refers to this as "the old canard about a chemical-industry conspiracy to develop herbicide-resistant plants" to increase profits, yet he offers no facts to counter the article's analysis.

The biotech industry's much-touted promises to create genetically engineered organisms to "eat" toxic wastes and oil spills are not even close to being fulfilled, Russell reported. In response, Hoyle berates *Amicus* for "dismissing" bioremediation. The fact is that all bioremediation being done commercially today in the U.S. uses naturally occurring bacteria, and research on genetically engineered bugs is a very small subset of this field.

Hoyle writes that the biotechnology industry has gotten over its early tendency towards "hype." Yet Carl Feldbaum, head of the industry's trade association, offered up fresh, new, outrageous claims in a recent letter to the *New York Times* (6/22/93). "[B]iotechnology companies are . . . producing more nutritious foods that require a fraction of the fertilizers, pesticides, and herbicides used on conventional crops," some of which "will grow in regions that experience frequent droughts and famines." But have any transgenic crop plants reached the market that truly reduce pollution or ameliorate drought? Our reporters couldn't find any promising examples.

Finally, Hoyle failed to respond to the most serious question raised in *Amicus*: Will agro-biotechnology lead us toward sustainability? Wes Jackson of the

Land Institute wrote, "Before biotechnology goes any further, we need to know why biotechnologists suppose they can avoid producing the negative impacts comparable to those created by chemical and nuclear technologies. How do we act on the fact that we are more ignorant than knowledgeable?"

Francesca Lyman, Editor

The Amicus Journal

Natural Resources Defense Council
New York, NY 10011

Transgenic animal experiments

To the editor:

Joseph Alper's article on xenografting (*Bio/Technology* 11:772, July) contains suggestions which are arguably both inaccurate and misleading. Producing genetically engineered pigs carrying one human cell-surface receptor gene does not constitute a source of organs that "for all intents and purposes are human." This is particularly so for the liver, whose complex metabolic biochemistry would remain emphatically porcine.

Hyperacute rejection is rightly pinpointed, in the piece, as the focus of this transgenic approach. However, even Dr. David White, whose research has been central to the work of Imutran, Ltd. (Cambridge, U.K.) one of the world leaders in this field, has pointed out that "should it prove possible to avoid such hyperacute rejection, the nature of a subsequent immune attack on such a [xeno]graph is completely unknown." (D.J.G. White, 1992, *Int. Arch. Allergy Immunol.* 98:1-5).

In all, 35 attempts to transplant animal organs into humans have been performed and all have failed. This new approach using transgenic animals remains highly experimental. There is no evidence that transplanting these unfortunate animals' organs into humans will actually save lives. There is, however, considerable evidence to show that attempts to produce genetically engineered transgenic animals of this type often produce physical and developmental abnormalities which inevitably cause pain and suffering to large numbers of animals. Transgenic pigs, carrying a human growth hormone gene, produced at the U.S. Government's Beltsville Research Station provide a well-known example of the dangers of this type of research. The Beltsville pigs suffered from defective vision, arthritis, muscular weakness, were impotent, and very susceptible to stress.

Recently, the British Government's Advisory Council on Science and Technology recommended the introduction of a new nationwide "opt-out" donor scheme which, the committee said, would alleviate the "chronic shortfall" of donors in the U.K. Such schemes have already been successfully implemented elsewhere. Rather than carrying out bizarre experiments on animals, investment should be made in health education and simple administrative action taken to save human lives.

Jo Towell

Science Researcher

British Union for the Abolition of Vivisection
N7 8LB London, U.K.