

THE LAST WORD

by Ronald E. Cape

ON DESERVING AWE AND ENVY

There's a truism: if it works, don't fix it. Or, if you're winning a race, don't shoot yourself in the foot. Yet that is precisely what the United States seems to be doing in biotechnology.

The popular media frequently enthuse about the "miracles" of biotechnology. But the wonderful accomplishments we know so well aren't miracles; they are the direct result of an enlightened, far-seeing, and generous policy of the U.S. government. For almost forty years, governmental support of basic research—mainly in the U.S.A., but also abroad—has produced a steady and spectacular parade of advances in understanding the basic structures and mechanisms of life, advances whose importance it is hard to exaggerate, and which have been reflected in a corresponding parade of Nobel prizes.

These same advances inspired the formation of pioneering genetic engineering companies. The useful applications these companies have already announced have in turn produced an unprecedented influx of private capital. Literally billions have been mobilized to fuel the race.

And that's exactly what it is: A race, with very large stakes in human health and welfare, in economic opportunities—in everything from balance of payments to jobs. And there is no question whatever about who started this race. Nor any doubt as to who is winning it. What policymakers in the United States seem to have lost sight of is how and why.

American accomplishments are viewed from Japan and Europe with awe and envy. People there seem to understand cause and effect better than U.S. policymakers. Their attempts to catch up naturally vary, reflecting for the most part their own assessments of their own strengths and weaknesses. And they have some impressive strengths that America cannot hope to match. Principal among these is their ability to mobilize the various elements of their societies in highly effective but "non-American" ways. The United States biotechnological revolution, on the other hand, owes its startling growth to a brand of entrepreneurship other countries would be hard-put to imitate—a product of a unique blend of risk-taking, venture capitalism, and stock markets. The few exceptions only prove the rule. Other countries coordinate resources specifically to "catch up with the U.S." In contrast, American companies do not plan tactics and strategy, nor spur their people with patriotic rhetoric. Rather, we offer individual incentives, largely but not exclusively material. The results speak for themselves.

Another issue, very much in the news now, is regulation. This powerful technology will be regulated. No one disputes this. Industry is making every effort to work with authorities to foster the development of appropriate, responsible working rules. This is unfortunately hampered by alarmist, irrational, and politically manipulative activities made easy in the U.S. today. The net result is that certain R&D and commercialization activities in the United States will be delayed some months or years. Advances abroad will probably bring policymakers to their senses. A comparable insanity, coming from an entirely different direction, suggests that mere interchanges of biotech information between U.S. and foreign

scientists or businessmen constitutes the kind of "export of technology" which requires close governmental monitoring and perhaps even licensing!

But these are secondary considerations, and our overseas competitors realize it. The most important element in U.S. domination of genetic engineering is our demonstrated excellence in basic research. This is the goose that has laid our golden egg. It is this excellence that is regarded universally with awe and envy. The Japanese have targeted basic research above all else as the area in which they are determined to catch up. To allow our commitment to basic research to erode is politically and strategically stupid. It is leading with our chin.

The U.S. biotechnology industry is financed at an unprecedented level, and certainly (in contrast to the situation abroad) in no need of government subsidies. It is the beneficiary, however, not only of optimistic private investors, but equally important, of the forty years of splendid basic research financed by the U.S. government. The system works! Given the positive feedback from the spectacular results, one would expect that we would be witness to debates as to how to do more of what we do best, and how to do it better. The sad fact is that support for basic research is barely holding its own. Some believe that it has declined in recent years, in real terms.

In short, we're in a race involving a technology we invented. The United States has been winning that race for reasons that are clear to everyone. The stakes are so high that one immediately thinks of the space race, and the national commitment that accompanied it. The certain benefits expected from biotechnology far exceed any enunciated for space exploration (which I am in no way criticizing), yet instead of responding to the challenge by substantially increasing our commitment to the underlying excellence that made it all happen, we are doing just the opposite. It's hard to believe.

I do believe that the United States should make a commitment to increase the funding of basic research in biotechnology. I stress basic research; in this country, applied research is the job of industry, and we do it well. In fact, a large part of the capital flowing into our industry has been so applied, with visible success. But we stand on the shoulders of many years of basic research. We look good today. How will we look twenty years from now? That's just about the time frame our competitors must consider in their attempts to catch up.

The United States should respond to this challenge as we did to Sputnik. In the space race we had to come from behind. In this race, we are ahead. The establishment and generous funding of a National Biotechnology Agency devoted to the objective of maintaining this leadership would signal our dedication to this goal.

If we do this, the world will continue to regard U.S. biotechnology with awe and envy.

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