

CORRESPONDENCE/

To the editor:

I am writing to correct information about Immunex Corporation which appeared in ["R&D Spending Still Soaring," *Bio/Technology* 9: 690, Aug. 1991]. Immunex reported 1990 research and development expenditures of \$23.2 million and revenues of \$34.9 million, not the \$9.8 million in R&D and \$30.8 million in revenue your article on page 692 indicates.

Your report may have created the false impression that the level of product research and development activity underway at Immunex significantly trails our peer group. According to Table 1 in your article, we would rank eighth in R&D expenditures among biotechnology companies.

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Our survey of research and development (R&D) spending should have more clearly defined research as company R&D expenses, excluding customer-sponsored and government-sponsored research. By these criteria, Immunex spent \$9.8 million on research last year and earned \$30.8 million in revenue.
—B.J. Spalding

To the editor:

I read with interest [John Hodgson's "Carbohydrate-Based Therapeutics," *Bio/Technology* 9: 609-613, July 1991]. I would like to point out a serious inaccuracy. Mr. Hodgson writes "... Cytel has shown that the expression of a human fucosyltransferase in non-myeloid cells confers ELAM-1-dependent cell adhesion," in the context of using new technology to develop oligosaccharide-based anti-inflammatory pharmaceuticals. This sentence references an article my colleagues and I published recently in *Cell* (Lowe, J.B. *et al*, 1990. "ELAM-1-dependent cell adhesion to vascular endothelium determined by a transfected human fucosyltransferase cDNA". *Cell* 63:475-484) and attributes the work to Cytel. I wish to note that none of the authors on that paper have been or are currently affiliated with Cytel. In fact, at the time the studies were done, all authors were either employed by the University of Michigan, or by the Howard Hughes Medical Institute at the University of Michigan, and the studies were supported solely by funds from the National Institutes of Health and by the Howard Hughes Medical Institute. Moreover, the technology derived from the work done in

my lab and with other collaborators at the University of Michigan (and erroneously attributed to Cytel by your article), has recently been licensed by the University of Michigan to GlycoGen, Inc. of South San Francisco, which is in many ways in direct competition with Cytel. While I realize that after a while the names of these companies all begin to sound alike, care should be taken (in press, at least) to ensure that they remain distinct entities. As one of the founders of GlycoGen, I am concerned that your error has given inappropriate credit for a powerful technology to a competitor, when in fact the technology was generated elsewhere and has been licensed to GlycoGen.

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To the editor:

I very much feel that Bernard Dixon's attack in your July, 1991 issue ["Thriving on Litigation," *Bio/Technology* 9: 595] on my survey of 430 recombinant DNA scientists requires a rejoinder as it is based on a gross misreading of the findings of the study ("The Impact of Activist Pressures on Recombinant DNA Research," *Science, Technology and Human Values*, 16,1: 70, 1991).

In his review of my paper, Dixon states that one of my chief conclusions is that biotechnology and biotechnologists thrive on litigation and that such a conclusion is misleading, harmful, simplistic, and is founded on disquieting imprecision. Nowhere does the paper state or imply that recombinant DNA scientists are "thriving on litigation," yet that is Dixon's major complaint and, in fact, is the title you have given his review.

Dixon bases his criticism on the responses obtained on a question that was designed to get at respondents' reactions to the overall effect of publicity about the field, not simply the impact of activism. This was the opening question of the survey and was immediately preceded by a paragraph designed to introduce the respondent to the subject matter of the questionnaire. The actual wording of the introduction and the first question of the survey are as follows:

As you know, there has been considerable publicity in the press and on television about recombinant DNA research. Some of this has been very

favorable, stressing great potential human benefits in medicine and agriculture. Other publicity has been highly negative reflecting a sense of concern, fear and even revulsion.

1. On balance, would you say that widespread public attention to recombinant DNA research has been beneficial or has it been harmful to progress in the field?

A total of 44% reported the effect of public attention as very or somewhat beneficial, 27% said that the impact was somewhat or very harmful, and 24% said that it has been equally beneficial and harmful. The remainder reported no impact.

A majority of the respondents was clearly not saying that activism has been beneficial. In fact, in answer to later questions in the survey, many showed considerable concern about possible litigation and controversy. Sixty-six percent felt that one or more areas of research might be shunned, and 43% expressed some concern about possible delays in their work. Fifteen respondents said that it is extremely or very likely that they will discontinue work in this area for such reasons. An additional 35 said that it is somewhat likely that they might discontinue their research. Most respondents (61%), however, did feel that activism has made for greater social responsibility on the part of scientists working in the field. In terms of consequences to the nation, 82% of the respondents felt that the United States might lose its competitive edge in genetic engineering because of controversy and litigation. Japan was seen as the country most likely to pick-up on their work if it had to be discontinued.

Dixon concluded that "... the heavy implication [of the study] is that the majority of researchers believe those [activist] sorts of pressures to have been helpful. This may be quite untrue." It is untrue.

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My strong impression was that Isaac Rabino had implied (not, as he now alleges, stated) that biotechnologists had thrived on litigation. I was certainly not seeking this conclusion during my careful and repeated reading of his paper. But I am delighted to know, for the reasons stated in my article, that Rabino did not draw this conclusion from his survey. —Bernard Dixon