LETTERS

Warburg Effect Revisited

Under the above title, an article was recently published in *Science* (17 July, p. 303) that I coauthored with Mark Spector, a graduate student in my laboratory. I feel compelled to withdraw some of the claims that we made in that article. On 24 July 1981, Volker Vogt, an assistant professor in our department with whom I have collaborated, discovered that the data obtained from an experiment involving immune precipitations from extracts of cells transformed with Moloney sarcoma virus were incompatible with the experimental protocol. This important discrepancy, and several others discovered with the generous help of other tumor virus laboratories, cast doubt on some of the published and unpublished claims we made. I state below which of the basic observations have been repeated by independent tests and which are doubtful.

1) I have confirmed the phosphorylation of the β subunit of the sodium, potassium–dependent adenosinetriphosphatase (Na^+,K^+-ATPase) by a protein kinase from Ehrlich ascites tumor cells prepared by Mark Spector. I have established that the phosphorylated amino acid on the β subunit is tyrosine.

2) We mentioned in our article a 6000-dalton polypeptide isolated in my laboratory by Spector that activated the phosphorylation of one of the enzymes of the protein kinase cascade (PK_S) by another (PK_L). I have performed these experiments several times with preparations of PK_S, PK_L, and activator, supplied to me by Spector, and observed at least a three- to fivefold stimulation of protein phosphorylation in the presence of the activator. Spector also gave to George Todaro, chief of the Laboratory of Viral Carcinogenesis at the National Cancer Institute, a preparation of the activator (now shown in Todaro's laboratory to be a mixture of several small polypeptides) which was found to be active in inducing phenotypic transformation of normal cells to cells that show anchorage-independence of growth. I have also tested a preparation of a transforming growth factor given to Spector by Todaro, and I have found it to be very active in the above described system of phosphorylation with PK_S and PK_L. It is obvious that these experiments will have to be repeated with enzyme preparations and an activator of known purity. On the other hand, I have been unable to verify the effectiveness of the different preparations of rabbit antiserum which supposedly neutralize and precipitate each of the four protein kinases. Since I know that some of these samples were shipped to other laboratories, I suggest that no further experiments be conducted with them.

I am also not certain of the correctness of some of the physical-chemical properties ascribed to the protein kinases, but I cannot state that they are wrong. We are now checking all published data, and it will take us many months before we know what is correct. We suspect that some of the data dealing with cells transformed by various tumor viruses are incorrect. We did not deal with these experiments in the *Science* article, but they were subjects of a paper in press which we are withdrawing. They were also presented by me and others in seminars, and I wish to withdraw these claims until we can verify them.

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The Einstein Papers

I regret that only limited space is permitted to comment upon the long article "Waiting for the Einstein papers" (News and Comment, 17 July, p. 309). I shall, therefore, be able to mention only a few of the many misstatements and omissions in that article:

1) The article does not mention (as it is omitted in almost all statements, briefs, and publications by Princeton) that, when proposing a board of three coequal editors, the Einstein estate suggested that John Stachel be appointed one of the three, the one primarily responsible for Einstein's physics. Nor is it mentioned that the estate's suggestion resulted from the recommendation of the search committee which had nominated Stachel as an "alternate" for such a panel of editors. Finally, it is not mentioned that Herbert Bailey, the director of Princeton University Press, and archenemy of the estate's proposal, had himself made similar suggestions in 1974 and 1975.

2) In stating the credentials of the arbitrator, who found in favor of Princeton University Press, it is not mentioned that he is an alumnus of Princeton University, as he himself stated on the last day of the arbitration hearings.

3) John Wheeler's statement about the Soviet publication of Einstein's writings and the implications made by him are misleading. The Soviets only reproduced published papers by Einstein, all