Letters

Phage in Human Vaccines

The article "Phage in live virus vaccines: Are they harmful to people?" by Gina Bari Kolata (News and Comment, 14 Feb., p. 522) calls attention to potential problems posed by phage contamination in human vaccines. While I feel that phage contamination is an important problem, some of the views attributed to me were not accurately reported. I have never advocated that "no more phage-contaminated vaccines should be sold." The currently employed live vaccines have had a clearly demonstrated beneficial effect against acute human diseases. To withdraw such vaccines from the public with no immediate substitute would represent a threat to the nation's health.

I have tried to draw scientific and medical attention to the presence of phage in vaccines following our discovery of them in fetal calf serum so that responsible action could be taken (*1*). My concept of a responsible action is threefold. First, it would be desirable to begin production of human vaccines with uncontaminated serum as soon as possible; second, a research program should be designed to isolate, classify, and study the contaminating viruses; and, finally, epidemiological studies should be initiated with current lots of vaccines which will be in use until vaccines produced with uncontaminated serum become available.

I do not believe that "phage routinely infect human cells and cause diseases." I do believe that bacterial viruses are classified as such by virtue of their ability to replicate in a bacterial host. Until further study is done, one cannot a priori state that bacteria are the limit of either the host range or the effects of phage (as in the case of β phage and the diphtheria toxin). Widely divergent host ranges have been clearly demonstrated in the arboviruses (human-insect), as well as in some plant-insect viruses. On further investigation, it may be found that *some* phage can cause direct pathological lesions or, alternatively, that *some* known human viruses may be able to replicate in bacteria. Even if the phage found in human vaccines were proved to be entirely harmless, their presence should alert us to the presence of other contaminating bacterial products, such as endotoxins.

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References

1. C. R. Merril, T. B. Friedman, A. F. M. Attallah, M. R. Geier, K. Krell, R. Yarkin, *In Vitro* **8**, 91 (1973); C. R. Merril, *Trans. N.Y. Acad. Sci.* **36**, 265 (1974).

Space Processing

Arthur L. Robinson's article on crystal-growing in space (Research News, 14 Feb., p. 521) summarizes well the experimental work carried out in this area on Skylab. I feel, however, that some additional points need to be expressed. First, crystal-growing comprises but one area of space processing research and development; electrophoretic and thermodiffusion separations, glass formation, and containerless and electrochemical processing are some other areas in which current research and feasibility studies indicate promising possibilities for unique products of economic value.

Second, feasibility judgments of projected space processes require experiments with more extensive and more carefully planned supporting research and development than are required for feasibility judgments of ground-based processes. As more experiments are performed, however, more concrete evidence as to whether there are benefits from space processing will become available. The Skylab experiments represent an excellent beginning in a brand-new technology which requires a brand-new approach to feasibility evaluations.

Space processing is attracting the attention of increasing numbers of materials scientists. A Space Processing Technical Committee has recently been formed under the auspices of the American Institute of Aeronautics and Astronautics. The objective of the committee is to provide a focus and information source for the increasing activity in space processing by the scientific community.

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Erythropoietin Available

The Division of Blood Diseases and Resources of the National Heart and Lung Institute will supply human urinary erythropoietin to qualified investigators for research purposes. Erythropoietin preparations of the following specific activities are now available: 9,000 to 12,000 units per milligram of protein (a maximum of 45 units to any one applicant); 15 to 100 units per milligram of protein; and 2 to 5 units per milligram of protein.

Requests for erythropoietin should include (i) a statement of the specific activity and number of units desired, (ii) a discussion of how the erythropoietin will be used, (iii) a description of the applicant's experience in erythropoietin research, and (iv) recent pertinent reprints. Requests will be reviewed by an Erythropoietin Review Group twice a year, in December and May. These should be submitted at least a month in advance of the meeting. Since the supply of erythropoietin is limited, it will be provided for investigations that promise to advance this field of science most expeditiously. Applications for erythropoietin should be addressed to Dr. Fann Harding, Special Assistant to the Director, Division of Blood Diseases and Resources, Building 31, Room 4A05, National Heart and Lung Institute, 9000 Rockville Pike, Bethesda, Maryland 20015.

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