of physician-scientists and suggests several well-thought-out solutions. ASCI vigorously endorses the need to address this urgent problem.

Ajit Varki
President, ASCI, Department of Medicine, University of California, San Diego, La Jolla, CA 92093–0687, USA. E-mail: avarki@ucsd.edu

Origin and Ancestor: Separate Environments

Nicholas Galtier *et al.* (Reports, 8 Jan., p. 220) argue on the basis of calculated values of the guanine plus cytosine (G+C) content of ribosomal RNAs that the last common ancestor of extant life on Earth was not a hyperthermophile. They correctly point out that this neither supports nor invalidates claims that life originated at high temperatures. They clearly state that the environment in which life began may not have been the same as the one in which the last common ancestor thrived.

This thrust of the report by Galtier *et al.* is accurately reflected in the accompanying item in This Week in Science (8 Jan., p. 143). However, in Gretchen Vogel's News of the Week article "RNA study suggests cool cradle of life" (8 Jan., p. 155), the two environments have been conflated.

It is important to recognize that the arguments for and against a thermophilic last common ancestor are almost irrelevant to discussions of the temperature at which life originated. The last common ancestor seems to have been an organism with a biochemistry about as complicated as that of a contemporary bacterium, and it must, therefore, have had a complex evolutionary history. During the course of their evolution, the predecessors of the last common ancestor may have adapted one or more times to changes in the temperature of their enviroment. Therefore, it is broadly accepted that the nature of the last common ancestor, whether or not it was a thermophile, may not provide evidence about "the cradle of life."

Gustaf Arrhenius
Mail Code A0220. University of California, San Diego, La Jolla, CA 92093, USA

Jeffrey L. Bada
Director, NASA Specialized Center of Research and Training in Exobiology, Scripps Institution of Oceanography, University of California, San Diego

Gerald F. Joyce
Departments of Chemistry and Molecular Biology, Scripps Research Institute, La Jolla, CA 92037, USA

Antonio Lazcano
Departamento de Biología, Facultad de Ciencias, Universidad Nacional Autónoma de México, Ciudad Universitaria, México 04510, DF

Stanley Miller
Department of Chemistry, Mail Code GRB-0506, University of California, San Diego

Leslie E. Orgel
Chemical Evolution Laboratory, Salk Institute for Biological Studies, La Jolla, CA 92037, USA

Health Care Costs

There is something fundamentally wrong when scientists produce cost-benefit analyses defending the value of what they do, as in "Effects of medical research on health care and the economy" by Herbert Pardes *et al.* (Policy Forum, *Science*'s Compass, 1 Jan., p. 36).

The need to support scientific research to comprehend ourselves and the world around us ought to be self-evident. But when it comes to judging whether research will illuminate our understanding of human disease and reduce health care costs, projections are dangerous because they are likely to be blurred by factors that have not been adequately analyzed. The result is false public expectations and damage to the credibility of science.

In the early 1970s, I became involved in reporting the recombinant DNA developments and other findings about the gene and the cell that had emanated from scien-