Setting Priorities for Science Funding

RATHER THAN LETTING THE BUDGETARY challenges of the day resign us to inappropriate cuts in science funding ("NIH prays for a soft landing after its doubling ride ends," D. Malakoff, 15 Jun., p. 1992), we should look back on the genesis of the National Institutes of Health's (NIH's) "doubling movement" as proof that public support and scientific promise can prevail.

In 1993, Nobel laureate Harold Varmus (then at the University of California, San Francisco) joined colleagues in challenging the community and politicians to double NIH's budget (*1*). This was backed by Research!America's public opinion polls showing citizen support for such increases (*2*). Thanks to strong leadership in the Congress and among stakeholders, the rhetoric became reality. And last year, other science agencies including the Agency for Healthcare Research and Quality, Centers for Disease Control and Prevention, and the National Science Foundation also benefited from the doubling campaign, experiencing budget growth in the double-digit percentages.

Reversing these trends or stopping them altogether would leave science funding to play catch-up with scientific opportunity. Society should not be resigned to only inflationary increases, flat line budgets, or "soft landings" for science. When 20 to 25% cuts in science budgets were proposed during my chairmanship of the Senate Appropriations committee in the mid 1990s, optimism and opportunity prevailed and agencies like NIH received near double-digit increases. Some of my former colleagues who were doubtful at the time are the science champions of today. We need to follow their lead and keep the rhetoric and the reality in line with scientific promise and the public's enthusiastic will to support it.

HON. MARK O. HATFIELD*
Post Office Box 8639, Portland, OR 97207, USA
*U.S. Senator (R-OR) from 1968 to 1997, and currently Chairman of Lasker/Funding First, a medical and health research policy program of the Mary Woodard Lasker Charitable Trust

References and Notes
1. J. M. Bishop, M. Kirschner, H. Varmus, *Science* **259**, 444 (1993).
2. Public opinion polls, 1993 to 2000 (Research!America, Alexandria, VA). Poll from 2000 available at http://www.researchamerica.org/opinions/

Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted by e-mail (science_letters@aaas.org), the Web (www.letter2science.org), or regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

Socioeconomic Biological Weapons

THE ADDITION OF THE FOOT-AND-MOUTH disease (FMD) virus to the list of potential biological weapons agents in the draft of the Protocol to the Biological and Toxin Weapons Convention (*1*) highlights changing perceptions of what is a biological weapon. Human pathogens such as *Bacillus anthracis* or *Clostridium botulinum* have long been the focus in biological weapons defense programs because of their imminent threats to our health. However, 2 years ago Iraq provided an example that comprehensive offensive biological weapons programs also consist of socioeconomic biological weapons like wheat cover smut and camel pox virus (*2*). This violation of the international ban on biological and toxin weapons by Iraq was brought to the attention of the international community by the United Nations Special Commission (UNSCOM) through its inspection and verification activities. UNSCOM was established after the Gulf War in 1991 and entrusted by the United Nations Security Council to take possession and supervise the destruction of all weapons of mass destruction in Iraq. The mandate of UNSCOM was terminated in 1999.

Today's farming industry is characterized by mass production, transport of livestock, and division of labor, a situation that creates numerous problems for dealing with a disease outbreak involving a highly contagious agent like the FMD virus. To contain the recent FMD epidemic that has the potential to spread to all of western Europe, authorities ordered the mass slaughtering of livestock, an approach previously used to counteract localized disease outbreaks. The economic losses are tremendous from not only the slaughter of hundreds of thousands of animals but also from the effects on tourism. Furthermore, secondary effects such as the rise in inflation due to higher food prices could make it harder for the European Central Bank—the equivalent to the U.S. Federal Reserve Bank—to reduce interest rates aggressively in a slowing economy. Higher interest rates would hurt the whole economy and reduce economic growth even further.

The course of events in the outbreak of FMD in Great Britain and the rest of the European Community should alert us to the fact that the industrialized agricultural system is highly vulnerable to the introduction of socioeconomic weapons. The lack of adequate mechanisms to contain outbreaks of animal and plant diseases poses a serious risk to national security. National as well as global security would therefore benefit from a multilateral Biological and Toxin Weapons Convention that has a strengthened verification regime, as currently being discussed in Geneva, Switzerland (see also the news article by R. Stone). Such measures are critical to counteract any development, production, stockpiling, or use of biological weapons.

Battling foot-and-mouth disease

CREDIT: ALASTAIR GRANT/AP PHOTO

JOHANNES RATH,[1] JOCHEN L BÜRGEL[2]
[1]Institute of Zoology, University of Vienna, Althanstrasse 14, 1090 Vienna, Austria. [2]Kerbelgasse 2, 1140 Vienna, Austria
*To whom correspondence should be addressed.