WHAT TO DO WITH THE SMALLPOX VIRUS

The last-known surviving specimens of the smallpox virus are now stored at the Centers for Disease Control and Prevention (CDC) in Atlanta, and at the Research Institute for Viral Preparation in Moscow. In May of 1995, the World Health Assembly will once again debate whether or not to destroy these specimens. Their decision will in part be based on the recommendations made by the World Health Organization's (WHO) executive board, which in turn will rely on the opinion of the organization's Ad Hoc Committee on Orthopox Virus Infections.

On September 9, 1994, the ten member Ad Hoc Committee on Orthopox Virus Infections unanimously recommended that the virus be destroyed on June 30, 1995. The committee also supported retention of genetic fragments of the virus for research purposes. However, it placed restrictions on this research to insure that these otherwise harmless fragments are not used to reassemble the smallpox virus. In addition, the committee recommended that no more than twenty percent of genetic fragments be kept in any one laboratory and that no studies be permitted in laboratories holding stocks of other pox viruses. These recommendations will carry great weight with WHO's executive board and with the World Health Assembly.

WHO's stratified system of decision-making reflects the careful deliberations that will guide the World Health Assembly in making a judgment on the issue. However, it also demonstrates that a purposeful international bureaucratic process is being used in the interests of the potential extinction of a species. Given the millennia of human death and suffering caused by this virus, it may seem surprising that there is a strong scientific constituency for saving it. This group, led primarily by virologists and molecular biologists, musters a number of arguments in favor of continued preservation of the virus.

The last human case of smallpox occurred in October, 1977, in Somalia. Eventually, the last known surviving specimens of wild virus were gathered in Atlanta and Moscow. The World Health Assembly had originally planned to destroy the two stocks of virus on December 31, 1993. However, the decision was never implemented. In May, 1994, the World Health Assembly put off making a decision until the 1995 meeting.
In 1990, scientists at the CDC documented the complete genetic code for the vaccinia virus, and soon thereafter did the same for the smallpox virus. These studies showed the viruses to be 98 percent identical, raising the obvious probability that they are descended from a common pox virus ancestor. Some scientists argue that further exploration of this and other relationships requires working with live smallpox virus. So does exploring the role of smallpox viral proteins that depress human cellular responses to the virus. Such knowledge, these scientists say, conceivably could help in understanding and combatting diseases caused by other pathogens such as Ebola Zaire, Muerto Canyon hantavirus, and other "emerging" viruses.

These arguments have great appeal and are bolstered by a sentiment in many societies that resists the purposeful destruction of a species. However, they are quickly and even convincingly countered by other scientists who favor destruction of the virus. They argue that knowledge of the genetic code for the smallpox virus and DNA clones of it obviate the need to preserve it. They point out that one does not have to keep the virus alive in order to conduct the research proposed by preservationists. The latter counter that a virus re-assembled in the laboratory can never be the same as the wild one. They also state that future advanced genetic and molecular biological research techniques applied to the smallpox virus might yield useful information that will be applicable to other deadly viruses. These cogent observations are refuted by those favoring destruction. They underscore that even future techniques when applied to genetic maps and DNA clones can produce the same results.

Some molecular biologists raise the concern that monkey pox might fill the niche left by smallpox through a cross-species mutation. Such a possibility would have been viewed as fanciful by many scientists prior to the appearance of the Human Immunodeficiency Virus (HIV). However, some now take this possibility seriously and also allow for the possible survival of the smallpox virus somewhere in the wild. These two concerns were first raised twenty years ago. However, they were then dismissed as unlikely by many who saw eradication of the disease as close at hand. Now, a number of scientists see these concerns as cogent reasons for preserving the smallpox virus.

The risks of the virus escaping from its present secure storage areas and causing widespread human disease are quite low. So is the prospect of terrorists seizing vials of live virus. Smallpox spreads slowly, making it unsuitable as an agent for either terrorist attacks or biological warfare. These assessments provide little comfort to those concerned