Imported Monkey Puzzle

Last fall, federal officials thought they had discovered the deadly Ebola virus in a batch of stricken monkeys imported into the United States from the Philippines. But *Science* has learned that federal investigators are perplexed about the virus, which was found in cynomolgus monkeys destined for biomedical research in the United States. In fact, officials at the Centers for Disease Control and outside experts are far from certain what the new virus really is.

Although the virus isolated from the Philippine monkeys is similar to Ebola virus—which caused widespread human fatalities in two African epidemics during the 1970s—under electron microscopy and other tests, it is clearly not identical, federal officials say. As a result, they are not sure how great a threat the virus actually poses to humans.

Deciding to err on the side of caution, New York and CDC last week imposed tough restrictions that will substantially reduce the importation of cynomolgus monkeys—16,000 are now imported per year—which are critical to biomedical research. (There are no U.S. breeding colonies for cynomolgus monkeys.) Hurt most by the restrictions will probably be pharmaceutical companies.

The virus in the Philippine monkeys was found in November by federal scientists. Since then, more monkeys imported from the Philippines have died from infection. And monkeys from Indonesia have tested positive for antibodies to the virus, but they have not become sick.

Based on these reports, the state of New York imposed tough restrictions that amount to a ban on the importation of cynomolgus monkeys and two other species. And since New York City is the port through which 80% of monkeys shipped to the United States are imported, the effects of the state's action could be severe.

CDC took a less drastic course of action and revoked the permits of three major U.S. importers of cynomolgus monkeys, which are used in research and drug testing for AIDS and neurological diseases, including Alzheimer's and Parkinson's. CDC cited the importers, Hazelton Research Products, Inc., Charles River Primates Corporation, and Worldwide Primates, Inc., for failing to implement proper quarantine and isolation procedures in handling imported cynomolgus monkeys.

The state and federal actions will probably have little impact on primate centers funded by the National Institutes of Health, because only about 7% of the cynomolgus monkeys imported in the United States are used in the federally funded centers. But Vance Gordon, assistant vice president of the Pharmaceutical Manufacturers Association, says that the New York restrictions could cause pharmaceutical research "to gradually grind to a halt." The state is requiring, for instance, that imported monkeys be tested for the virus in the country of origin, but no commercial test is currently available.

What's known about this virus and Ebola virus? Micrographs of a tissue sample from one of the dead Philippine monkeys showed long, large rod-like structures resembling the Ebola virus. That virus, named for a small river in northwestern Zaire, accounted for as much as 88% mortality in two separate epidemics in Zaire and the Sudan in 1976. Antigen from the Philippine monkeys was isolated, purified, and injected into three test monkeys. Two of them died.

But the pieces of the puzzle that are now emerging do not necessarily fit the profile of the Ebola virus. That virus has so far not been seen anywhere else in the world outside of Africa. It might be a new strain. If it is, it does not seem to be nearly as virulent as the original. Of the 149 workers who have come into contact with the infected monkeys, only two workers showed antibodies when tested. Neither has become ill, even though the incubation period, believed to be about 3 weeks, has long since passed.

According to Joseph McCormick, chief of CDC's special pathogens branch, who investigated the African outbreaks, the antibody reactions might not even be specific to the new pathogen. Blood samples from people in other areas of the world, including Panama and Alaska, which CDC scientists believed should not react to the monkey virus have in fact reacted to the antigen isolated from the Philippine monkeys.

The situation is so puzzling that some CDC scientists have stopped calling the new agent the Ebola virus and have begun referring to it merely as "Ebola-like." They'd like to go to the source, the Philippines, but McCormick says that so far the U.S. government has been unable to win the full cooperation of the Philippine authorities. "We'd like to set up a surveillance system of animals of Philippine facilities and look at the handlers," McCormick says. "We'd look for human illness. And we'd like to know about what's going on with the population around the animals where they're caught." But so far the Philippines hasn't let U.S. investigators in the country. ■ **MARJORIE SUN**

Trouble Ahead for the SSC?

Legislation being drafted by Representative Robert Roe (D–NJ), the chairman of the House Science, Space, and Technology Committee, could cause serious problems for the Superconducting Super Collider. Concerned about the project's escalating costs—the price tag has jumped from $4.5 billion when the SSC was first proposed in 1987 to $7.5 to $8 billion today—Roe is proposing to slap a limit on the total amount the government will put into the venture. He is also trying to establish a set of stiff technical milestones that would have to be met before the bulk of the federal funds are released.

The legislation, which Roe was preparing to introduce as *Science* went to press, would cap total federal contributions to the project at $5 billion. This means that backers of the 54-mile collider would have to come up with at least $2.5 billion in outside funds. Only a few weeks ago, however, W. Henson Moore, deputy secretary of the Department of Energy (DOE), told reporters that no more than $2 billion in nonfederal funding could be expected—$1 billion from the state of Texas and another $1 billion in parts and services from foreign participants.

To provide more management accountability for the project, Roe's bill would establish a new post of undersecretary for the SSC within DOE. And total spending on the project would be held to $1.2 billion until a string of at least 50 prototype dipole magnets are successfully tested. They would have to operate to design specifications with a full complement of supporting correction magnets, cryogenic systems, and power supplies. The idea is to make sure the bugs in the magnets are worked out in advance instead of after the project is well under way. Only when this test is completed and nonfederal contributions have been secured would DOE be authorized to spend the rest of the funds.

No surprise, Roe's bill is getting a cool reception within DOE. One program manager is concerned about how DOE can come up with another $500 million in nonfederal funding. The department may be able to cut capital costs by shifting some items into the operating budget.

Despite such worries, Roe was expected to try to push the bill through his committee on 28 March—just one day after its scheduled introduction. ■ **MARK CRAWFORD**