Letters

Filovirus Infection in Newly Imported Monkeys

This letter is written in response to Joseph Palca's News & Comment article "Import rules threaten research on primates" (1 June, p. 1071) and to bring to the attention of medical and biomedical scientists the present status of filovirus infections in monkeys newly imported into the United States.

In the fall of 1989, monkeys in several shipments imported from Asia into the United States were found to have been infected with a filovirus similar to Ebola, which had caused large outbreaks of human disease with high case-fatality rates in Africa during the 1970s (*1*). The virulence of this newly isolated Ebola-like filovirus for humans was not known, but prevention of human infection and limitation of human exposure to this new agent was considered a high public health priority.

Infections, determined by seroconversions and in one case by virus isolation, occurred in some persons occupationally exposed to infected cynomolgus monkeys from Asia (*2*). Although severe hemorrhagic fever had marked past human filovirus infections, no illnesses were noted in association with these recent human infections. Serum samples from a large number of persons with varying levels of exposure to monkeys were tested for filovirus antibody, and approximately 10% of persons having close occupational contact with monkeys in quarantine were found to be positive to one or more of four filovirus test antigens (*3*).

These findings prompted local, national, and international primate transport and import actions to prevent further filovirus infections of humans. In January of this year, the Centers for Disease Control (CDC) published Interim Guidelines for Handling Nonhuman Primates During Transit and Quarantine (*4*). In March, compliance with these guidelines was made a mandatory condition for continued registration of importers, and on-site inspections of all import quarantine facilities were begun. In April, the CDC announced the availability of a special permit for the importation of cynomolgus, African green, and rhesus monkeys for those importers meeting certain requirements (*5*).

Together, these actions have resulted in substantial improvement in import quarantine facilities and work practices. Monkey shipments have begun again as importers have come into compliance. As of 27 September, six importers had been granted special permits; four of those were extended permits for unlimited shipments over a 180-day period. Four additional applications for permits were under review. These importers represent all the major importers of monkeys into the United States. Importations have continued to increase since mid-June under these procedures.

As these animals clear import quarantine, end-users are being advised to adhere to recommendations for the safe handling of monkeys, such as those used to minimize the risk of transmission of any infectious agent, including filoviruses, *Mycobacterium tuberculosis,* and B virus.

It is our belief that these new procedures will help to safeguard public health, while allowing importation of monkeys that are needed for research.

WILLIAM L. ROPER
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REFERENCES

1. *Bull. WHO* **56**, 271 (1978); *ibid.*, p. 247.
2. *Morbid. Mortal. Wkly. Rep.* **39**, 266 (1990).
3. *Ibid.*, p. 404.
4. *Ibid.*, p. 22.
5. *Fed. Regist.* **55**, 15210 (20 April 1990).

"Internationalization" of Engineers

The editorial by M. Granger Morgan (31 Aug., p. 969) was "right on the money." His point regarding international language and cultural skills deserves special consideration. The engineering education community should look closely at ways to stimulate interest in foreign cultures, languages, and technology in the budding young engineers who, in large part, will determine the destiny of the country in the 21st century.

The majority of American engineering schools do a first-rate job of producing highly trained technical specialists, but a poor job of imparting cultural and language skills to these specialists. If American corporations are to gain a global competitive advantage, however, they must do more than simply produce goods for sale overseas, they must have engineers and managers who have an international experience.

Over the past year and a half, I have worked closely with École Polytechnique Féminine (Paris), the European Community (EC), and several key people here in the United States to structure an innovative program in engineering education. This program, American-European Engineering