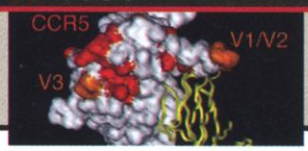

member nations before it is finalized early next year, the European Union's smaller states are expected to take aim at the large sums that could fund collaborations among bigger countries. But some scientists with a European vision hope that FP6 will become a milestone on the road to what virologist Paolo Lusso of Milan's San Raffaele Scientific Institute would like to see: what he calls "the research community of the 'European nation.'" –ROBERT KOENIG

FOOT-AND-MOUTH DISEASE

U.K. Outbreak Is Latest In Global Epidemic

CAMBRIDGE, U.K.—What began in late February as a single pig farm blighted by foot-and-mouth disease (FMD) could spiral into a full-blown epidemic in the United Kingdom, experts say. The reappearance of the dread disease here seems to be the latest twist in a yearlong rampage around the world of a virulent strain of foot-and-mouth virus.

As *Science* went to press, 16 farms across the U.K. had reported cases and been quarantined, and the government had prohibited the movement of susceptible animals: primarily cows, sheep, pigs, and goats. Thousands of animals have been slaughtered and burned atop huge pyres in a bid to halt the disease's spread. The U.K. may be on the brink of a reprise of the 1967 scourge that saw 500,000 animals destroyed. "There is every likelihood that the disease will reach epidemic proportions," says Liz Glass, a veterinary immunologist at the Roslin Institute in Edinburgh.

The outbreak apparently originated on a pig farm in Newcastle, England, probably from infected animal feed imported from Asia. The U.K. strain is identical to one that recently stormed previously disease-free countries such as Japan, North Korea, and South Africa. "It seems to be a very virulent and successful strain" in all susceptible species, says Paul Kitching of the Institute for Animal Health (IAH) in Pirbright, U.K., who heads the world's largest FMD research group.

The viruses that cause FMD (members of a diverse family of small RNA viruses called picornaviruses) are not all that deadly; they can cause fatal cardiac arrest in young animals, but most adult animals recover. But animals produce less meat and milk after an infection, so the only economically sensible option is to cull infected herds. And that has to happen fast, because FMD is extraordinarily infectious: Inhaling fewer than 10 viral particles can infect an animal, and the wind can carry virus from one blighted farm to another, even dozens of kilometers away.

A vaccine was first developed in the 1960s, and the IAH stocks enough to vaccinate 500,000 animals in an emergency. The vaccine, which consists of a virus that has been killed with chemicals or ultraviolet light, offers a good degree of protection, says Martin Hugh-Jones, a veterinary epidemiologist at Louisiana State University in Baton Rouge. For instance, it has enabled South America to all but eradicate the disease from the continent.

But the vaccine has been known to cause occasional outbreaks, presumably because the procedure used to kill the virus is imperfect. So although it's an important weapon in endemic areas, the vaccine is risky in countries that are currently disease free. Vaccinated animals can also be carriers of the virus—although they show no symptoms—and spread it to other, unvaccinated animals. And finally, once vaccinations are used, it is much harder for a country to show that it's disease free; the virus could be lurking in a small number of animals. "Better to keep them all susceptible," says Hugh-Jones, "and shoot your way out when an outbreak occurs"—as Britain is doing now.

Several research teams have tried to produce a vaccine that doesn't have these drawbacks. In the past, attempts to develop a vaccine based on foot-and-mouth virus peptides failed to offer adequate protection, as did a live, weakened virus. Researchers at the U.S. Department of Agriculture's (USDA's) lab in Plum Island, New York, have now set their hopes on a crippled adenovirus that has been equipped with two extra proteins from the foot-and-mouth virus. The vaccine is safe and protects pigs well, says USDA virologist Marvin Grubman; the first experiments in cattle are "encouraging," too, he says. But Grubman says it will be years before the vaccine hits the market. Until then, aggressive monitoring and slaughter is the control method of choice for disease-free countries.

–JOHN PICKRELL AND MARTIN ENSERINK

CREDIT: BRIDGET JONES/AP

Batten down the hatches. Like farms across the U.K., parks were closed to protect susceptible wildlife, including deer.

2002 BUDGET

NIH Gets Big Boost; Lobbyists Want More

Sometimes good just isn't good enough. President George W. Bush said last week that he will request a record $2.8 billion increase for the National Institutes of Health (NIH) in his 2002 budget proposal. But some biomedical science groups say that the figure—a 13.8% boost, to $23.1 billion—is only a starting point for their campaign to win a $3.4 billion boost.

"We will work in a bipartisan fashion with our congressional champions … to increase the agency's budget," vowed Mary J. C. Hendrix, president of the Federation of American Societies for Experimental Biology. The 60,000-member group has helped lead an effort, begun in 1998, to double NIH's budget to $27.3 billion by 2003.

Maintaining a long Washington tradition of previewing the good news—and keeping silent about the bad—in upcoming White House budget proposals, Bush briefly mentioned his plans for NIH during a photo opportunity on 23 February, 4 days before outlining to Congress and the nation his spending proposal for the 2002 fiscal year, which begins 1 October. (The budget was unveiled after this issue of *Science* went to press; the details will be reported in next week's is-