during an AIDS vaccine trial should be offered the "highest attainable" treatment in their locale that can be sustained after the trial ends. To offer more, said Dwip Kitayoporn of Thailand's Mahidol University, would be "like leaving a Cadillac or Rolls Royce in our country, but no one can afford to drive it or even repair it." Major Rubaramira Ruranga, an HIV-infected Ugandan who works at a research center in Kampala, warned that people may also sign up for vaccine trials just to get access to drugs. "We're going to create a safe haven for people who are going to be put on the trial," Ruranga said. This, others noted, would violate the ethical principle that researchers must not "unduly influence" people to join trials.

But an impassioned, ardent minority rejected the idea that trial volunteers should be treated any differently from those in developed countries. Dirceu Gerco, coordinator of an AIDS vaccine center in Brazil, worried that setting a lower standard for poor countries was a slippery slope. "When you put the level of ethics below the maximum, it's very easy to lower it more," said Gerco, whose sentiments were shared by several other Brazilians at the meeting.

Francis and several Thai scientists underscored how this debate is far from theoretical: They are now gearing up for a large trial of the company's vaccine in Thailand before the end of the year. Neither the company nor the cash-strapped Thai government plans to give cutting-edge treatments to people who become infected. When Public Citizen's Peter Lurie was asked at the meeting if the group would campaign against this trial, he said no comment—which is one more critical question that the meeting left unanswered.

–JON COHEN

MICHAEL O'BRIEN

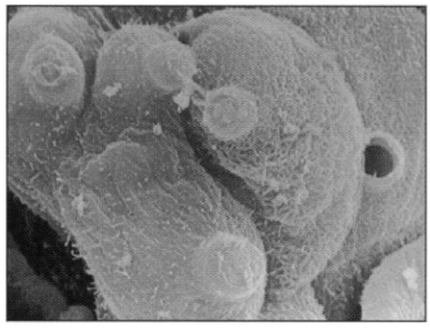
WILDLIFE BIOLOGY

Fungus May Drive Frog Genocide

The case is so frustrating it would make even Hercule Poirot sigh. Amphibian populations have been plummeting in the past 2 decades, but the perpetrator has left precious few clues to its identity. Time and again, scientists have visited woods filled with frog song just 3 or 4 years earlier, and "they're just gone," says David Wake of the University of California, Berkeley—the frog corpses already decayed or eaten. Now, researchers have finally caught a killer in the act.

CSIRO ANIMAL HEALTH

The accused is a new fungus that has turned up in 120 frogs and toads of 12 species in Australia and seven species in Panama



BERGER *ET AL.*, PNAS 15, 802 (1998)

Mug shot. Prime suspect in frog deaths in Australia and Panama, the chytrid fungus.

often during mass die-offs in relatively pristine areas. Fourteen scientists from Australia, the United States, the United Kingdom, and Canada will describe the fungus—from the phylum Chytridiomycota—in the 21 July *Proceedings of the National Academy of Sciences*. "I don't think this is the cause of amphibian declines," says Allan Pessier of the National Zoo in Washington, D.C., who is part of a second team that has seen the same fungus in zoo populations of amphibians in the United States. Researchers haven't found any fungi when they've looked for them in frogs in California, for instance, where pesticides are the leading suspect in amphibian die-offs, says Gary Fellers of the University of California, Davis. But, adds Pessier, "in my opinion, this is a significant finding."

After noticing spore casings on the skin of rainforest frogs that died in Queensland, Australia, in 1993, a team led by veterinary pathologist Lee Berger of James Cook University in Queensland homed in on a suspect: a new species of chytrid fungus, whose prior rap sheet had it infecting plants and insects, not vertebrates. Meanwhile, U.S. scientists had found a similar fungus in frog corpses after a die-off in western Panama in January 1997. "This is the only thing the dead and dying frogs shared in common," says veterinary pathologist D. Earl Green of the U.S. National Institutes of Health. The team has yet to isolate the fungus and prove it's the culprit, rather than something else on the skin. They are also unsure about the killer's modus operandi—whether it exudes a lethal toxin or suffocates frogs by clogging their skin pores, through which they breathe.

Also a mystery is just how the fungus turned up on two far-flung continents in such a short time. One unsettling theory is that researchers traveling between Australia and Central America carried it with them on their boots. Another is that the fungus had been lurking in both hemispheres but didn't start killing frogs until after they were weakened by something else—such as UV light coming through the thinning ozone layer, or pesticides. One way to sort this out is to examine the fungal DNA to establish the phylogenetic relationship among isolates.

The DNA studies will also help determine how fast the fungus might be country hopping. For example, chytrid may have spread to Panama from Costa Rica, where in 1988 half the 40 amphibian species on a Monteverde ridge vanished. Although the detective work is far from finished, says team member Peter Daszak of Kingston University in the U.K., "what we've got for the first time is real evidence—dead bodies."

–JOCELYN KAISER

ARCHAEOLOGY

Eight Millennia of Footwear Fashion

From the bear-fur shoes that once graced the feet of Japanese samurai to the sleek platform sandals that strut down runways today, people have long garbed the humblest part of the human body—our feet—in high fashion. Now ancient sandals and slip-ons from central Missouri reveal that attention to fashion in footwear goes back 8000 years or more. On page 72, archaeological textile expert Jenna Kuttruff of Louisiana State University in Baton Rouge and her colleagues

Fancy footwear. An undated fiber sandal from the cache at Arnold Research Cave.

analyze and date a rare collection of 35 perishable fiber and leather shoes excavated decades ago from a Missouri cave.

One shoe is dated at more than 8000 years old, making it among the oldest in North America. And the shoes' complex weave and design indicate that early North Americans were just as fashion conscious as we are. "The complexity in design means that we had artists and craftspeople even then," says Kathryn Jakes, a fiber specialist at Ohio State University in Columbus. Adds James Petersen, an archaeologist at the University of Vermont in Burlington: "In modern society we show our status and individuality through our clothing. But one would not have guessed this of prehistoric native North America 8300 years ago," as social distinctions in personal effects such as jewelry don't generally appear until 4000 to 5000 years ago.