



Victim? A sick chimp at Gombe.

orangutans from pristine forests.

At the same time, primatologists are urging field workers and ecotourists to adopt the strict precautions already in place in primate centers. Workers at U.S. zoos and primate facilities don masks and gloves to handle the animals and must also undergo vaccinations, parasite

screens, and annual tuberculosis tests. But some field sites have been slow to adopt similar measures. "It's easier for me to go up with in 5 meters of one of the rarest animals in the world [mountain gorillas] with no health restrictions than it is for me to travel to Cincinnati or UC [the University of California] Davis and go behind the scenes in their primate house," says Michael Cranfield, director of the Mountain Gorilla Veterinary Project.

In an effort to change that, Wallis led a working group at an international conference of ape researchers and zookeepers last May to discuss improved monitoring of primate diseases and better health care for people living near primate reserves. In July,

the American Society of Primatologists asked its members to tighten safety standards, further underscoring the urgency of these issues. And that same month, a team of field researchers and wildlife veterinarians held a workshop in Africa to teach field workers how to recognize signs of illness in chimps, take samples, and conduct a necropsy—all of which will help them diagnose sick animals and catch outbreaks early. For Wallis, who has witnessed several outbreaks at Gombe, these efforts can't come a moment too soon. Says Wallis, "I just want to know we've done what we can."

—DAN FERBER

Dan Ferber is a writer in Urbana, Illinois.

## AIDS RESEARCH

# The Odd Intersection of HIV and Scrub Typhus

Can contracting another disease help suppress HIV? Researchers report intriguing new findings

Sometimes the most intriguing ideas come out of left field. Take the peculiar discovery in a new study from Thailand suggesting that a disease called scrub typhus may offer novel leads to developing anti-HIV treatments and vaccines.

Typically, when HIV-infected people become infected with other pathogens, the level of the AIDS virus in their blood skyrockets. But in the 5 August issue of *The Lancet*, researchers report that AIDS patients infected with the bacillus that causes scrub typhus—a mite-borne disease that produces fever but usually isn't fatal—have precisely the opposite reaction: Their HIV levels plummet. "It's very intriguing," says Peggy Johnston, head of the AIDS vaccine branch at the U.S. National Institute of Allergy and Infectious Diseases (NIAID). "It's clear that there's something interesting going on here, and it does appear to be some kind of suppressive factor."

The idea for the study began 2 years ago, when George Watt, a tropical disease specialist at the United States Armed Forces Research Institute of Medical Sciences in Bangkok, became intrigued by one HIV-infected patient who developed scrub typhus. Caused by *Orientia tsutsugamushi* (formerly *Rickettsia*), scrub typhus is transmitted by chiggers that fall off rodents and then live in the scrub bush. Surprised that this one patient's HIV level—or "viral load"—dropped coincident with an acute case of scrub typhus, Watt, Pacharee Kantipong of Chiangrai Regional Hospital, and their colleagues began systematically

hunting for HIV-infected people who also had acute cases of scrub typhus.

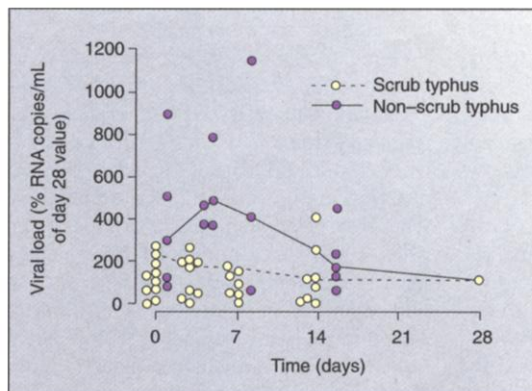
As the researchers report in *The Lancet*, their massive, yearlong screening program in Thailand uncovered 10 people who clearly had both infections and no others. First, the Thai team compared viral loads in these patients to a control group of five HIV-infected people who did not have scrub typhus but did have either malaria or leptospirosis. Over the 28-day study, the investigators found that the patients with scrub typhus had significantly lower HIV viral loads than those with the other diseases. In two of these people, in fact, the levels fell so low that the most sensitive tests could not detect HIV. In another curious twist, the scrub typhus patients happened to have more damaged immune systems, with an average of only 117 CD4 white blood cells, as opposed to an average

of 255 CD4s in the control group. (By definition, an HIV-infected person has AIDS when CD4 counts drop below 200.) The new findings are "an absolutely fascinating example of how one infection ameliorates the effect of another," says Sanjeev Krishna, a malaria specialist at St. George's Hospital Medical School in London and an author of the paper.

More evidence that scrub typhus somehow suppresses HIV came from a second experiment, a comparison of viral variants in the same 10 scrub typhus patients and another control group whose CD4 counts were more closely matched. As HIV disease progresses, several researchers have shown that the virus typically evolves to a form more adept at destroying immune system cells. Specifically, once these nastier HIV variants infect cells, they can readily fuse with other cells to form clumps called "syncytia," an efficient means of transmitting the virus and speeding the course of disease. None of the 10 patients with scrub typhus had a syncytia-inducing HIV variant, whereas five of the seven controls did.

Watt and his co-workers attempted to tease out how *O. tsutsugamushi* might thwart HIV. Preliminary data in both mouse and test tube experiments with human sera point to antibodies against scrub, which for some unknown reason seem also to bind HIV. "This is an opportunity to examine very seriously what scrub typhus is telling us about HIV," says Krishna, who suspects that these new insights might provide clues for developing both AIDS treatments and vaccines.

NIAID's Johnston particularly enjoys the oddity of the finding. "I like surprises," she says. "It keeps us thinking." —JON COHEN



Surprising suppression. Scrub typhus lowers HIV levels.

CREDITS: (TOP TO BOTTOM) J. WALLIS/UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER; WATT ET AL., THE LANCET 356 (9228), 5 AUGUST 2000