

## Deadly Ebola virus seen to thrive in bats

Most pet owners know the hazards of vaccinating an irate cat or dog. But just imagine wielding the hypodermic to inoculate a variety of wild jungle critters, including snakes, lizards, and bats. Imagine also that an accidental needle stick could be fatal because the syringe teems with a virus that is spectacularly lethal to humans.

Robert Swanepoel of South Africa's National Institute for Virology in Sandringham and his coworkers took such risks and have something to show for their efforts. They have demonstrated for the first time that healthy bats may harbor the fearsome Ebola virus.

Team members caution, however, that the study does not prove bats are the sole reservoir of the virus. "If you did an exhaustive search, you might find other species as well," says Thomas G. Ksiazek of the federal Centers for Disease Control and Prevention in Atlanta, one of Swanepoel's collaborators. Still, Ksiazek notes, bats could be the animal host scientists have sought since Ebola first emerged in Yambuku, Zaire, in 1976.

Ebola has inflamed the public's imagination even though fewer than 5,000 people have been infected worldwide. Sufferers go mad, they endure terrific pain, and 60 to 90 percent of them die of florid hemorrhages, with blood leaking from every orifice. Yet no one knows where

the virus comes from, where or when it will strike next, or how to treat those who cross its path.

Peter Jahrling of the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) at Ft. Detrick in Frederickburg, Md., says the new study's findings are consistent with what is known about Ebola's epidemiology.

For instance, epidemics in Nzara, Sudan, in 1976 and 1979 were traced to a cotton factory where thousands of bats dangle from the rafters as workers toil beneath them. Other outbreaks have been linked to the Kitum Cave in a mountain in Uganda. "Guess what you've got plenty of in that cave. Bats," Jahrling says. Researchers are now tracking the virus in Ivory Coast's Tai Forest, where chimps and humans have contracted the disease.

Finding Ebola's natural home has proved challenging for several reasons. Ebola outbreaks are rare: Only eight have been recorded in humans. Epidemics occur in widely separated geographic locations, often in difficult-to-reach, jungle-choked regions of Africa.

As a result, field expeditions are extraordinarily difficult. Scientists viewed the 1995 outbreak in Kikwit, Zaire—which afflicted 315 people, killing nearly 300 of them—as an opportunity to find out where the virus lurks.

After the outbreak, scientists from CDC, USAMRIID, and the South African institute combed Kikwit to test local creatures for the virus. In total, the researchers trapped 2,500 mammals (mostly rodents), 36,000 insects, and 500 other animals, including snakes. So far, the results have been negative, but completing the tests will take time.

Swanepoel's team also took another tack. Under laboratory quarantine, the scientists tried to infect birds, bats, snakes, lizards, tortoises, rodents, insects, and plants. Only the bats proved capable of carrying Ebola, the team reports in the October-December *EMERGING INFECTIOUS DISEASES*, the CDC's online journal.

The bats carried large quantities of replicating virus without becoming ill. Only one bat made antibodies, indicating that the virus does not usually provoke the animals' antiviral defenses. In the absence of any such counterattack, the virus remains virulent in its host. Indeed, the researchers found live Ebola in bat feces, which may represent a source of transmission to other animals.

Although humans have gotten Ebola from infected monkeys, these primates are considered unlikely long-term hosts because the virus kills them. Rather, monkeys are a suspected link in the chain of transmission. Colobus monkeys, for example, can transmit the virus to chimpanzees, which hunt them. In February, 21 people in Gabon got Ebola after eating a dead chimp. — S. Sternberg

## Depression fails to scar personality

Researchers have found that people who suffer from major depression frequently exhibit personality traits such as introversion, a clinging dependency on others, and neuroticism, which is characterized by chronic emotional distress and a tendency to give up or cope poorly in the face of stressful situations.

Studies to date have not established whether these traits render people more vulnerable to becoming depressed or whether they to some extent represent personality scars inflicted by depression.

A new investigation finds that, in the long run, personality shows no sign of scars after a typical episode of major depression. However, repeated or unusually long bouts of this disorder may indeed exert a lasting impact, contends a research team headed by psychologist M. Tracie Shea of Brown University School of Medicine in Providence, R.I.

"The role of personality in depression [of moderate duration and severity] is more consistent with the vulnerability model than with the scar hypothesis," the scientists conclude.

Shea and her coworkers drew on a large sample of relatives, spouses, and community residents recruited as part of a national study of people who had been diagnosed with depression or other mood disorders. All participants granted psychiatric interviews and filled out extensive personality questionnaires on two occasions, 6 years apart, when they exhibited good mental health.

In a group with no prior incidents of any mental disorder, 28 people suffered their first episode of major depression in the period between the two interviews; 528 remained free of psychological conditions during that time. In an expanded group, which included people having prior mental disorders but no history of mood disorders, 94 experienced an initial bout of major depression between interviews and 708 stayed free of mental disorders.

No evidence of personality change sparked by depression emerged in either group, Shea's team reports in the November *AMERICAN JOURNAL OF PSYCHIATRY*. For instance, depressed individuals did not lose self-confidence in dealing with others, become more withdrawn,

or report more neuroticism at the second interview.

Those who experienced more than one episode of depression in that time, however, cited a statistically significant rise in their emotional reliance on others. Moreover, those whose depressive bouts lasted more than a few months cited substantial drops in feelings of sociability and outgoingness.

Episodes of major depression may also evoke temporary boosts in neuroticism, the researchers note. An earlier study, directed by psychiatrist Kenneth S. Kendler of the Medical College of Virginia in Richmond, found that women displayed moderate increases in neuroticism for several months after recovering from an initial period of depression.

Kendler and his colleagues are now completing an extended study of personality and depression comparable to the one directed by Shea.

"Major depression and neuroticism may be influenced by a common genetic mechanism," Kendler proposes. Genes affect broad predispositions, such as sensitivity to stress, that interact with many biological and environmental factors to influence mood and behavior, he asserts. — B. Bower