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Nathan Wolfe

Johns Hopkins University

He combs tropical africa to find the newest diseases, before they find us.

Most scientists who study emerging viruses toil in labs. Nathan Wolfe befriends hunters in rural Cameroon, convincing them to dab blood samples from their prey onto bits of filter paper-and to offer up samples of their own blood as well. To learn how hunters are exposed to disease, he sometimes accompanies them on days-long treks, sloshing through streams to follow as they pursue wild animals through the jungle. "It can be difficult to keep up. They move quickly," he says.

Wolfe realized that hunters could help him track virus origins while he was in Uganda as a grad student watching chimpanzees pursue monkeys for food. The chimps were exposed to the blood of their prey through injuries and ingestion, which could explain why chimp SIV-the progenitor of pandemic HIV-is a hybrid of two monkey viruses: The chimps contracted it from two different species of monkey. Since human viruses such as HIV and Ebola originated from human-animal contact, Wolfe wondered whether African hunters, who expose themselves with every slip of the knife, might inadvertently trigger new outbreaks.

To investigate, he and his team traversed Cameroon's back roads by Jeep and on foot, collecting blood from hunters and their prey. Lab analysis of viral DNA extracted from the hunters' blood samples confirmed his hypothesis: Multiple nonhuman viruses were present, including a number of previously undiscovered viruses from the same family as HIV. One of these, HTLV-3, has a known counterpart in nonhuman primates, and Wolfe's team thinks another, HTLV-4, probably has a simian analogue too. Not all viruses have epidemic potential. But one that has a high mutation rate could spread quickly, first infecting members of a hunter's family, then people in nearby towns and beyond. "Nathan's work has important implications for predicting where emerging diseases could occur," says Don Burke, one of Wolfe's Johns Hopkins colleagues.

Wolfe, 35, plans to analyze body fluids from more local people to compare the hunters' infection rates with those of nonhunters, to better assess the transmission risk that primate hunting poses. He is also developing clinics in Cameroon for AIDS-vaccine testing. But eliminating new diseases from the get-go is his ultimate goal. "Health organizations spend so much money dealing with epidemics," he says. "It would be better to prevent them from occurring in the first place."

-Elizabeth Svoboda