Lyme Vaccine Proves Highly Effective

As a rule, scientists like to have their work validated by other researchers. On rare occasions, simultaneous studies provide mutual confirmation.

That's the case with two large studies that each find a vaccine against Lyme disease to be a potent weapon against the tickborne ailment. The findings could pave the way for a general immunization program—delivering a blow to the most widespread pest-carried disease in the United States.

Two research groups, including scientists from New England, the Midwest, and the mid-Atlantic states—three regions of high Lyme disease incidence—report in the July 23 NEW ENGLAND JOURNAL OF MEDICINE that anti-Lyme vaccines showed some effectiveness in the first year after inoculation and conferred strong protection after a booster shot a year later.

"This vaccine is going to be valuable in those areas where Lyme disease is highly endemic," says Philip J. Wand, a microbiologist at the University of Wisconsin-Madison.

One of the groups, led by researchers at Tufts University School of Medicine in Boston, recruited 10,936 people age 15 and older in 10 states. About half of the volunteers were injected with the vaccine and the rest with an inactive substance. In the first year after receiving two injections a month apart, 22 vaccinated people showed clinical signs of Lyme disease, as did 43 unvaccinated people. In the second year, after a third injection, only 16 vaccinated people became infected, compared with 66 of those getting the placebo.

In addition, blood tests showed that during the first year of the study, 2 vaccinated and 13 unvaccinated people contracted an insidious form of Lyme disease in which no symptoms show up for months or years. In the second year, 15 unvaccinated people had such asymptomatic Lyme disease, compared with none of those vaccinated.

In the other study, a group led by researchers at the Robert Wood Johnson Medical School in New Brunswick, N.J., gave two injections a month apart to 10,305 people age 18 and older in five states. Half received the vaccine; the rest got a placebo. In the first year, 37 unvaccinated people contracted Lyme disease, while only 12 vaccinated participants did. In the second year, after a booster shot, 26 unprotected people got the disease, compared with only 2 of those vaccinated.

In both tests, researchers fashioned a vaccine from purified outer-surface protein A, a compound that is found on the surface of *Borrelia burgdorferi*—the bacterium that causes Lyme disease. Human antibodies, having encountered the protein in a vaccination, respond immediately when the person is subsequently bitten by a Lyme-carrying deer tick or western black-legged tick.

The corkscrew-shape bacteria called Borrelia burgdorferi, *which cause Lyme disease, were thwarted in two vaccine tests.*

The new studies show that while the vaccine isn't 100 percent effective, booster shots increase its potency, says study coauthor and rheumatologist Leonard H. Sigal of the Robert Wood Johnson Medical School. Lyme vaccinations may need to be repeated periodically, like tetanus shots, he says.

The vaccine caused few side effects. Any fever or redness at the vaccination site usually disappeared within 3 days, as with an influenza shot, Sigal says.

The Food and Drug Administration is reviewing this and other research on the vaccine. Scientists are currently gauging how long protection lasts, trying to determine the best vaccination schedule, and testing the vaccine in youngsters, says Allen C. Steere, a study coauthor and rheumatologist at Tufts University School of Medicine. "I would expect that it would work in children the same way it works in adults," he says. *—N. Seppa*

Sizzling June fires up greenhouse debate

Showing rare ardor, Vice President Al Gore charged that Congress has tried to douse government discussion of global warming even as extreme temperatures have set records in the United States and across the world.

Gore and federal scientists reported last week at a White House press conference that the global average surface temperature for June hit an all-time high, far surpassing all other Junes since 1880. Each month of this year has shattered global temperature records, making the first half of 1998 substantially warmer than that of previous years, even the rest of the 1990s, already the hottest decade on record.

"This is so incredibly unusual—to have 6 months in a row where every single one of those months sets the record for being the hottest," Gore said.

The administration is currently battling Congress over whether to adopt policies aimed at curbing emissions of heat-trapping greenhouse gases, in accordance with an international treaty adopted last December in Kyoto, Japan. "The evidence of global warming keeps piling up. How long is it going to take before the people in Congress get the message?" asked the vice president.

El Niño helped warm Earth last year and early this year, but conditions in the tropical Pacific cooled off rapidly in June, says Thomas R. Karl, director of the National Climatic Data Center (NCDC) in Asheville, N.C. Nonetheless, global temperatures remained elevated throughout June and the first half of July.

"There's absolutely no question. Clearly, we have very compelling evidence to suggest that global temperatures are indeed warming," said Karl.

In the climate treaty known as the Kyoto Protocol, the United States agreed to cut its emissions of greenhouse gases by 7 percent from 1990 levels by 2012. Before the treaty becomes U.S. law, however, it must be ratified by the Senate, where it is currently stalled in committee. The House Appropriations Committee has sought to stifle public discourse on the issue, says Gore. It directs the administration to "refrain from conducting educational outreach or informational seminars on policies underlying the Kyoto Protocol until or unless the Protocol is ratified by the Senate."

As the political battle over global warming seethed in Washington, D.C., the southwestern and southeastern United States endured a withering drought and heat wave. The months of April through June were the driest on record for Florida, Louisiana, New Mexico, and Texas, according to the NCDC.

Karl offered snapshots of the extreme conditions. Amarillo, Tex.—less prone to extreme heat than Dallas—had 13 days in a row in June with temperatures topping 100°F. And Brownsville, Tex., went 17 days with the minimum temperature never dropping below 80°F.

Meteorologists cannot determine whether any individual event, such as a