INDIAN OCEAN TSUNAMI

In Wake of Disaster, Scientists Seek Out Clues to Prevention

Having claimed more than 150,000 lives and destroyed billions of dollars’ worth of property, nature last week reminded the world of the terrible cost of ignorance. Now the nations devastated by the massive earthquake and tsunami that ravaged the Bay of Bengal the morning after Christmas Day are hoping to marshal the political and scientific will to reduce the toll from the next natural disaster.

A week after the tragedy, the question of how many lives might have been saved had authorities in those countries recognized the danger in time to evacuate their coasts remains unanswered. But it’s a hypothetical question, because the information needed to take such steps doesn’t exist. That’s why researchers are gearing up for an international data-collection effort in the affected countries, aimed at improving models of how tsunamis form and setting up a warning system in the Indian Ocean. “This was a momentous event both in human and scientific terms,” says Costas Synolakis, a civil engineer and tsunami researcher at the University of Southern California in Los Angeles. “It was a failure of the entire hazards-mitigation community.”

As relief efforts continue, scientists are traveling to the ravaged coasts to survey how far inland the water ran up at different points along the shorelines, how tall the waves were, and how fast they hit. In addition to providing a detailed picture of the event, says Philip Liu, a tsunami expert at Cornell University who is flying to Sri Lanka this week, information from these field surveys will enable researchers to test computer models that simulate the propagation of tsunami waves and the pattern of flooding when they break upon the shore. The geographical span of the disaster presents an opportunity to “run simulations on a scale that has not been possible with data from smaller tsunamis in the Pacific,” says Synolakis, who is joining Liu in Sri Lanka.

Among other surveys being conducted in the region is one led by Hideo Matsutomi, a coastal engineer at Japan’s Akita University, who is studying the disaster’s effects on the islands of Andaman and Nicobar some 200 km northwest of the epicenter, institute officials were reassuring the media that the Sumatran event posed no threat to the Indian territory by pummeling the islands of Andaman and Nicobar some 200 km northwest of the epicenter, institute officials were reassuring the media that the Sumatran event posed no threat to the Indian subcontinent. About the same time, in neighboring Sri Lanka, scientists at the country’s only seismic monitoring station, in Kandy, reached a similar conclusion. “We knew that a quake had occurred—but on the other side of the ocean,” says Sarath Weerawarnakula.
The Sumatra quake turned out to be far more powerful than early readings suggested.

Kapil Sibal, minister of state for science and technology and ocean development, says India plans to collaborate with Indonesia, Thailand, and Myanmar to eventually build a tsunami warning network in the region. “We’ve been jolted hard, and we’ll take remedial action,” Sibal says.

—YUDEJIT BHATTACHARJEE
With reporting by Pallava Bagla in New Delhi.

**VIROLOGY**

**Chemokine Gene Number Tied to HIV Susceptibility, But With a Twist**

Like a long-married couple, a virus and its host shape each other in subtle yet profound ways. AIDS researchers investigating this dynamic have detected several changes in both HIV and humans that likely evolved during the high-stakes wrestling match between the virus, the cells it infects, and the immune system. Now a massive review of DNA from more than 5000 HIV-infected and uninfected people has found that the human genome appears to have responded to the virus by stockpiling extra copies of immune genes that influence a person’s HIV susceptibility as well as the course of disease in infected people. These findings may lead to an important practical advance: better designed AIDS vaccine studies.

Described in the 6 January *Science Express* (www.sciencemag.org/cgi/content/abstract/1101160), the DNA analysis focuses on a gene with the ungainly name of *CCL3L1*. Steven Wolinsky, a virologist at Northwestern University Medical School in Chicago, Illinois, whose lab also has studied the relationship between immune genes and HIV, calls the work “an intellectual and technical tour de force.”

Sunil Ahuja, an infectious-disease specialist at the Veterans Administration Research Center for AIDS and HIV-1 Infection in San Antonio, Texas, led an international team that examined the importance of segmental duplications in the human genome. People typically have two copies of each gene (one from each parent), but stretches of DNA sometimes appear repeatedly, causing the overrepresentation of certain genes. Many of the segmental duplications discovered to date include genes related to immunity, inspiring the notion that some duplications protect against invaders such as viruses. Ahuja and co-workers wondered whether HIV might be the target of such an evolutionary response.

The researchers first hunted for segmental duplications that include *CCL3L1* in 1000 people from 57 populations. Immune
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