US army to investigate "friendly fire" infections of Gulf war veterans

At the meeting of the American Academy of Environmental Medicine in October, Garth Nicolson, from the University of Texas Medical School in Houston reported identifying the microorganism, *Mycoplasma fermentans*, in Desert Storm veterans who became ill after returning from the Gulf war in 1991.

Using DNA probes, he found that 50% of a group of 170 Gulf war veterans and their symptomatic family members had specific *M. fermentans* sequences in their white blood cells. Furthermore, Nicholson found that the mycoplasmal sequence contained "unusual genes," including the HIV-1 *env* gene.

The results of this latest preliminary research are not yet published, but they build on results published in the spring of 1996 in *The International Journal of Occupational Medicine, Immunology and Toxicology* (Vol 5, No. 1,1996). In that study, on a group of 30 veterans and their family members suffering from Gulf war syndrome (GWS), Nicolson again found *Mycoplasma fermentans* DNA in half of the patients. He also showed that patients who tested positive for *M. fermentans* recovered either totally or partially after taking the antibiotic, doxycycline.

Nicholson first thought that the HIV-gene-containing mycoplasma was a biological warfare agent—but that seems unlikely. Mycoplasmas don't kill people (not quickly at least), they are difficult to culture, and since they lack a cell wall would be far less able than "conventional" biological warfare agents like *Bacillus anthracis* or *Clostridium botulinum* to withstand the rigors of the battlefield. It seems more likely that the mycoplasma was a contaminant in one of the vaccines given to Desert Storm soldiers. Circumstantial evidence supports this: There are US army reserve personnel who were vaccinated, but did not serve in the Gulf and were later diagnosed with GWS. The Army performs rigorous tests to ensure vaccines are not contaminated. But Nicolson argues that testing could have been by passed if vaccines were prepared hastily. In 1990, The Food and Drug Administration (FDA, Rockville, MD) issued an interim rule to allow the Department of Defense (DoD) to waive the informed consent requirement. This allowed the DoD to use drugs under investigation without telling veterans what they were getting.

Nicholson has been investigating *Mycoplasma* in Gulf War syndrome since 1994 and although other scientists are somewhat skeptical about his finding, the US army is now planning to fund independent research to clarify the matter.

Asked by the army in spring 1995 during a briefing at the Department of Veteran's Affairs (Washington, DC), Harold Watson, a mycoplasma specialist at University of Alabama Medical School (Birmingham, AL) has applied for a grant from the DoD to screen Alabama Gulf war veterans for mycoplasmas. Although the application was not initially approved, Watson will know within a few months whether he will receive a grant from reserve money.

IMAGE UNAVAILABLE FOR COPYRIGHT REASONS

Battles during "Desert Storm" in 1991 have been followed by a long debilitating battle with Gulf war syndrome for many veterans.

Watson is not an entirely willing conscript to this cause: "I agreed to undertake this to resolve a question and I'm really not eager to do this." Information about the possible link between *Mycoplasma* and GWS had been circulated on the internet and the army and Watson agreed that someone should find out whether there was any substance behind what Nicolson was saying. "Things were getting blown out of proportion," Watson says.

Watson will not be the first investigator to look into Nicholoson's claims. Shyh-Ching Lo of the Armed Forces Institute (Washington, DC) has at the request of the army screened veteran's blood for *Mycoplasma* using a PCR-based method on two separate occasions since 1993. Lo has been championing the role of mycoplasmas in disease for the past eight years and so he was eager to perform the experiments. But he found nothing. In the spring of 1995, the army asked him to screen more samples. Again nothing.

There are two likely explanations for why Lo has not been able to duplicate Nicolson's findings. The first is that Nicholson's DNA-probe-based "nucleoprotein gene tracking" technique either has an edge over standard methods or is faulty. "Personally, I have some questions about the gene tracking technique," says Lo. He has tried through army channels, although not through direct contact with Nicholson, to get hold of the DNA sequences that Nicolson uses in his PCR experiments. Nicholson claims he has not heard from the Army in this regard.

The other explanation for the discrepancy in results may be that the two investigators are simply dealing with significantly different groups of veterans. Nicholson's group is palpably ill. The samples that Shyh-Ching Lo analyzes are given to him by the army and their origin is unknown to him. At no point has either investigator worked with the same samples.

Gunjan Sinha

Three-year financing window to open wide for biotechnology?

The financing window for biotechnology companies could start to open again soon and could stay open until the millennium, according to a panel of biotechnology finance experts assembled in New York*. 1996 has already been the best year ever for biotechnology companies to raise money. The window was wide open at the beginning of the year, with nearly $1.9 billion raised in the first three months of 1996, and another $3.5 billion during the second quarter. But then—as befits the chillier season in the Northern hemisphere—it started to close; biotechnology companies raised only $821 million in the third quarter, and the fourth quarter to date is no more promising. Now many biotechnology companies that either missed their opportunity to hit the market or had to withdraw public offering want to know when the next good time will come.

The last time biotechnology had been funded at anywhere near the 1996 level was in 1991, when over $4.5 billion was invested . Between 1992 and 1995, only $13.9 billion dollars came from investors, and many companies had to enter partnerships with larger firms to keep afloat. Will there now be another four-year drought?

"Probably not," was the consensus of the finance panel, which included investment bankers and company chief executives. Collectively, they expressed "cautious optimism" that the window would reopen soon—perhaps as early as the first quarter of 1997.