

## **YES, I FEAR MICROBES**

*By David A. Watson, Ph.D.*

The hour was late, and I was tired. I was also uncomfortably warm, because I was outfitted in two layers of surgical gowns, two sets of latex gloves, and a full face shield. Why all the garb? It was 1989, and I was working as a laboratory technician in a newly established AIDS research facility. I had just received human specimens for use in research to understand the effects of the Human Immunodeficiency Virus (HIV) on cells of the immune system. Even though I wanted very much to head home to my wife and young daughter, I dutifully loaded vials containing body fluid samples into a large centrifuge. Unknown to me, only days earlier a safety alert had been issued indicating that a crucial metal flange deep within the instrument might fail suddenly and catastrophically. I finished preparing the samples, buttoned up the machine, and flipped the switch to start the processing. Seconds later the centrifuge exploded with a loud boom. A quick inspection revealed that I was still in one piece, and that the integrity of the outer casing of the machine was not compromised. Even so, when I opened the instrument after donning a mask (in those days we were not certain how dangerous concentrated samples of HIV might be), it was obvious that the damage was extensive, and that millions of viral particles were everywhere.

As a nation, we now face the very real threat of large-scale exposure, through the U.S. mail, to a very bad bacterium, called *Bacillus anthracis*, or anthrax. This pathogen has been developed into a biological warfare agent just within the past century, though it has been documented as a disease of animals and occasionally humans since antiquity. It attacks and kills ruminants, then persists in the soil as extremely stubborn spores for decades. When prevented from clumping into larger aggregates, the tiny individual

spores are capable of descending deep into the lungs and producing a rapidly progressing and highly lethal systemic infection. The good news is that, unlike other pathogenic microbes, the disease caused by anthrax is not contagious. The bad news is that like a smart bomb, a letter containing this bacterium can be targeted very specifically and is extremely difficult to detect in advance. Moreover, as with many weapons, collateral damage frequently occurs; in this case it is our mail carriers who have suffered.

Unfortunately, these tragic deaths may be but a harbinger of a much bigger threat to our well-being.

There is speculation that as many as 17 nations have developed the capacity for offensive bio-warfare (see <http://www.emedicine.com/emerg/topic853.htm>); presumably, in most cases this includes anthrax. Far fewer countries are thought to harbor the extremely deadly smallpox virus as an agent of aggression. In fact, recent ongoing debate within the scientific community has focused on whether to destroy what had been thought to be the last two remaining stocks of the virus, in Russia and at the Centers for Disease Control in Atlanta. It now appears that other stocks of smallpox may exist covertly within the old Soviet empire (a legacy of graft existing within the Russian scientific community following the demise of the U.S.S.R.) Since no natural infections have occurred in the wild since the late 1970s, routine immunization against smallpox has not been carried out for more than 20 years; hence, most young people have not been immunized, and the immunity of even those of us old enough to have been vaccinated is likely in steep decline (if it still exists at all). Releasing this virus into a now largely unvaccinated U.S. population would doubtless result in enormous loss of life (possibly in the millions) through exposure of no more than a handful of primary targets (see

<http://cryptome.org/smallpox-wmd.htm>). For this reason, production of a new stockpile of smallpox vaccine is urgently needed.

So, how did I respond? By scrupulously adhering to a strict protocol for accident cleanup (once I recovered my wits). In the weeks that followed, I twice underwent testing for the presence of the virus in my blood. Thankfully, both results were negative, though at the time infection was considered a real possibility. We now know a great deal more about the virus that causes AIDS, such that the level of reticence in working with HIV has greatly decreased; to this day, however, it ranks as one of the scariest moments of my life. Fear of the unknown gnawed at me for some time; I worried about my future and that of my family. I wonder if it might not be similar to what our postal carriers are going through these days?