

3.2 Biotoxins, Genetic Engineering and New Technologies as Sources of Novel Weapons

Piller and Yamamoto (1988) list the following applications of biotechnology as examples of novel weapons (verbatim quotations indicated by page numbers in parentheses):

- "Drug resistance. The genetic basis for bacterial resistance to antibiotics and viral resistance to other drugs is well understood. Genes that confer such resistance can be transferred to a Biological Weapon (BW) agent to thwart medical countermeasures" (page 22).
- "Increased hardiness. Finding a way to keep aerosolized microorganisms from dying once they are sprayed from aircraft or exploded from bombs has been one of the most vexing questions for BW planners. Solar radiation, drying, and temperature fluctuation easily kill most agents adapted to live within humans or animals. But microencapsulation—a novel method of protecting individual BW organisms within organic compounds—has already extended the range of agents that can be weaponized effectively" (pages 22-23).
- "Defeating vaccines, natural resistance, and diagnosis. Our immune system's antibodies can overcome a virus or other BW antigen by targeting the organism's specific surface structure. Using [recombinant deoxyribonucleic acid] rDNA to make minute changes in this antigenic surface could render antibodies ineffective.[.....] Virtually anyone exposed [to a novel agent] would contract the new disease. Through rDNA methods a form of [a] virus could be created that would frequently mutate—in essence making many "mistakes" as it self-