

## EXECUTIVE SUMMARY

The conferees on the FY96 National Defense Authorization Conference noted with concern that the recent progress in biotechnology could potentially lead to the development of new biological warfare (BW) agents and capabilities among potential adversaries of the United States. This report provides information to the Congressional defense committees on:

- the national security threats posed by such potential developments of new agents through advances in biotechnology and genetic engineering;
- recommendations related to reducing the impact of progress in these areas;
- the utility of increased emphasis on research and development of medical countermeasures related to mid-term or far-term biowarfare threat agents; and
- other measures that could reduce the threat of these technological advances and reduce the threat of biological agent and weapons proliferation.

Acquisition of biotechnology and biological weapons' capabilities is considerably easier than was the case in the 1940s and 1950s. There has been an explosion in biotechnologies and genetic engineering technologies—all of which have legitimate civilian applications—which may enable proliferation. As Gordon Oehler, Director of DCI's Non-Proliferation Center, testified before the Senate Armed Services Committee, March 27, 1996, "we see a continuing pursuit by many countries to acquire chemical and biological weapons. The chilling reality is that these materials and technologies are more accessible now than at any other time in history."

This report focuses on these issues and provides the basis for more detailed discussion of funding and program priorities, particularly in the area of medical biological defense research.

Despite revolutionary developments in biotechnology, great costs and technological barriers still block the ready development of novel BW agents. The detailed understanding of genetic structures has not yet led to the ability to control these genetic mechanisms. One can be certain, however, that significant advances in biotechnology will continue. It is viewed that classical BW threat agents pose the greatest concerns for the near- and mid-term. Far-term threats are not so easily predicted. Biotechnology is a two-edged sword. While providing an increasing number of methods for the protection of U.S. forces, biotechnology also sheds new light on methods to kill or incapacitate with ferocity.

Investment in medical science and technology base (S&T) programs has a high payoff in providing products that support readiness and battle sustainment for small costs relative to the overall DoD S&T budget. The fiscal S&T guidance funding profile currently is adequate only to address the highest threat priorities, and to sustain "core" capabilities needed to prepare to respond to new high priority scenarios (*e.g.*, counterterrorism). Resources are not entirely adequate to cope with lower priority items, including long-term threats from novel BW agents. Continued and stable investment will ensure that the Department's core S&T capability will be able to adapt to evolving threats.

## RECOMMENDATIONS

- Provide funding of new basic research and scientific investigations of biotechnology, genetic engineering, and other areas with potential applications for biological warfare defense products, *i.e.*, monoclonal antibodies, genetically engineered vaccines and drugs.
- Determine the impact of personnel and resource reductions to DoD Medical Chemical and Biological Research Laboratories, especially focusing on the ability of the Department to maintain its core science and technology base capabilities in these areas.
- Ensure the appropriate levels of funding for unfunded requirements and program requirements unique to biological defense (for example, Food and Drug Administration licensure of medical products).
- Continue educating senior leaders on the nature of the threat and possible approaches to defense.
- Continue to exploit the very strong US commercial/university activity in biology and biotechnology; develop a Biotechnology Advisory Council with senior industry/university representation, working with ATSD(NCB) and reporting to USD(A&T) to bring the latest technologies and advances to rapid fruition.
- Intelligence efforts must emphasize collection and analysis of nations' "dual-use" biological industrial and scientific capabilities and develop indications and warning of adversarial use of these dual-use capabilities.
- Increase training for medical personnel for biological and chemical warfare casualty management.