

Bio-Inspired Innovation and National Security

Robert Armstrong, Mark Drapeau, Cheryl Loeb, James Valdes



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Ever since man took to the battlefield, biology has played a significant role—both unintentionally and intentionally—in conflict. Prior to the discovery of the germ theory of disease, most combat deaths were the result of infections. And even before that understanding, biology was used in an offensive role. An early example was the Tatars' hurling of plague victims' bodies over the wall of the Crimean city of Kaffa in 1346, which probably helped spread the Black Death. Despite various treaties and protocols, offensive biological weapons use has continued to this day, with the anthrax attacks of 2001 being the most recent incident. Such activity has led to a strong defensive program, with medical science developing numerous countermeasures that have benefited both civilian and military populations. But that is the "old" biological warfare. Covert programs for the development of novel weapons will advance; likewise, the development of countermeasures will also continue. The present volume, however, does not address these issues. Rather, it reviews and analyzes current research and likely future developments in the life sciences and how they will significantly influence the biological material available to warfighters-not as weapons systems, but as augmentation to currently available equipment. This is the "new" face of biological warfare. The editors of this volume have assembled experts in research, warfighting, and defense policy to describe biological applications from the smallest to the largest scale. In addition, they show how thinking in biological terms can improve our procurement cycle and enhance our development time and costs. Finally, no description of biotechnology would be complete without a consideration of ethical and legal issues related to such research and development. This edited book is an important contribution to the literature and nicely captures a number of ongoing military basic science research projects with long-term implications for the Department of Defense. It does not purport to be an exhaustive accounting, but it is an excellent introduction for policymakers to garner an understanding of where biology is going to fit into 21st-century readiness and preparedness for our fighting force.

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