



Book Review

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Biodefense: Principles and Pathogens

**Edited by Michael S. Bronze
and Ronald A. Greenfield**

Wyomondham, United Kingdom: Horizon Bioscience
838 pp., \$335, hardcover
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Disclaimer: The opinions and conclusions expressed in this article are solely the views of the reviewer and do not necessarily reflect those of the U.S. Food and Drug Administration.

The 2001 anthrax attacks on the East Coast of the United States, the 1984 release of *Salmonella* bacteria in Oregon, the multiple attempts by the Aum Shinrikyo cult in Japan to use biological weapons, and the regularly-reported threats of Al-Qa'ida and other terrorist movements attempting to use biological agents have demonstrated that the public health sector needs an increased sense of urgency to adequately prepare for bioterrorism events.

One core component of biodefense is continuing education. Physicians, scientists, government officials, and other groups involved in public health need to be constantly aware of current developments in disease pathology, treatments, detection, biological safety, and biosecurity to provide an effective response to bioterrorism attacks. Michael S. Bronze and Ronald A. Greenfield, University of Oklahoma Health Sciences Center in Oklahoma City, Oklahoma, have edited a book about biodefense that assists with this challenge. One of the notable aspects of this text is that its information is current, including many references published in 2005.

Biodefense: Principles and Pathogens' 23 chapters are detailed review articles and the book is actually

two different texts in the same volume. The first seven chapters are a general discussion on biodefense, including a history of biological weapons, public health preparedness, public policy and legal issues surrounding terrorism in the U.S., hospital preparedness and infection control, surveillance and detection methods, and psychosocial issues.

The remaining 16 chapters are detailed presentations about biological agents and biological toxins. Most of these chapters have sections on the agent's history, microbiology, epidemiology, pathogenesis, veterinary manifestations, clinical manifestations in humans, diagnosis, treatment, prognosis, prevention, and research issues. Substances from all three CDC Bioterrorism Agent Categories A, B, C are presented. Chapters about food safety, water safety, agroterrorism, and emerging infectious diseases such as multi-drug resistant tuberculosis and severe acute respiratory syndrome are also included, along with a timely discussion on highly pathogenic avian influenza.

Biodefense: Principles and Pathogens is almost entirely text. Although there are few images and tables, those that are included summarize many of the book's important topics. The limited graphics is not necessarily a disadvantage because *Biodefense: Principles and Pathogens* is basically one large review article. As a result of this format, the book contains more information than tightly-packed chromatin in an eukaryotic cell. If the reader wants to see more graphics, the excellent citations and lists of references should minimize any effort to locate original publications containing the desired graphics.

The first section presents many excellent points on preparedness. For example, the text compares nations such as the United Kingdom and Israel that

have national bioterrorism response plans in place to the United States which has 50 different plans, one for each state. Additionally, when discussing the Strategic National Stockpile of pharmaceuticals and vaccines, the text cautions that most communities will be on their own for at least 72 hours until these supplies can be distributed. It is a sad irony that a few months after this book was published, the U.S. was challenged by these issues during the strikes of Hurricane Katrina and Hurricane Rita. As a result of those two storms, adjusting the responsibilities of federal, state, and local agencies when responding to natural disasters and terrorist attacks and planning for the degree of self-sufficiency in disaster response each must assume will likely be often discussed topics over the next several years.

The chapter on surveillance and detection is well written and lists methods that are both state-of-the-art and in development. A longer discussion about the CDC Laboratory Response Network (LRN) would have been helpful; however, this subject is addressed in detail on the CDC web site <www.bt.cdc.gov> and in *Biological Weapons Defense: Principles and Mechanisms for Infectious Diseases Counter-Bioterrorism* by Lindler et al (Humana Press, December 2004).

The chapters on the agents are comprehensive. Because of their depth and detail, physicians and scientists will probably find them more useful than the general public. As in the first part of the book, the references continue to be very current and easily retrievable. The clinical information is written at a level of detail similar to the *PDR Guide to Biological and Chemical Warfare Response: Diagnosis, Treatment, Prevention* by Sifton et al (Thomson PDR, February 2002) and is oriented toward physicians and other healthcare personnel. The microbiology sections are in-depth summaries of current knowledge. The research issues presented at the end of each agent's chapter list several new treatment strategies in development.

The first half of the book could have been ex-

panded. These chapters offer only an overview of bioterrorism preparedness; however, they do provide a solid launching pad for further investigation into this topic, and the long lists of references make finding information on this subject easier.

The food safety, water safety, and agroterrorism chapters would have been more useful if they were longer, too. However, this observation is not actually a weakness of the book. As mentioned above, the text is meant to be a review of biodefense. The relatively small size of these sections is most likely the result of most efforts in biodefense and infectious diseases being focused on higher-level threats. Longer reviews will likely appear when research efforts in these areas are increased.

The main disadvantage of *Biodefense: Principles and Pathogens* is the cost, which is higher than many biodefense and biology books available today. Including an electronic version of the book on a CD-ROM, similar to *Biological Weapons Defense: Principles and Mechanisms for Infectious Diseases Counter-Bioterrorism*, would have been a helpful addition. Another option would have been access to a Web site that has book updates similar to *Molecular Cloning: A Laboratory Manual* by Sambrook and Russell (Cold Spring Harbor Laboratory Press, January 2001). Again, the lists of references at the end of each chapter are quite valuable, saving readers a great deal of time on literature searches.

Biodefense: Principles and Pathogens is a good primer on current issues in biodefense. Although it will be most beneficial to physicians and researchers, the text will also be helpful to biological safety professionals, especially when performing risk assessments. It will be a nice addition to any biodefense, infectious disease, or biological safety library.

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