



## Book Review

Reviewed by Jens H. Kuhn

Harvard Medical School, Southborough, Massachusetts

### **Ebola and Marburg Viruses— Molecular and Cellular Biology**

**Edited by Hans-Dieter Klenk  
and Heinz Feldmann**

Wymondham, United Kingdom: Horizon Bioscience  
369 pp., \$180, hardcover  
ISBN 0-9545232-3-7

Ebola- and marburgviruses are members of the family *Filoviridae*. The filoviruses have caught the attention of the general public because of the gruesome hemorrhagic fever outbreaks they have caused in human populations in Africa. Recently, biodefense experts have begun to focus on them due to revelations put forth by defectors from the former Soviet bioweapons development programs. According to these whistleblowers, marburgviruses had been weaponized and loaded into long-range ballistic missiles targeted at Western countries by the end of the 1980s; and advances in offensive research on ebolaviruses were promising enough to imagine the deployment of similar mass casualty weapons in the nearer future.

Although the Soviet bioweapons program was most likely terminated in the early 1990s, these reports hint at the possibility that other states or state-sponsored terrorist groups could turn to filoviruses during their quest for novel and devastating weaponry. Hence, biodefense planners in the United States and also in Europe added the filoviruses to the tops of the lists of biological agents of concern. They are now considered to be a threat to the public (select agents) and a threat to U.S. national security. (According to the extent of the threat, filoviruses have been recognized as being among the most dan-

gerous and hence have been listed as Category A agents.)

Government facilities of the U.S. Departments of Defense, Energy, and Health and Human Services, as well as academic and private institutions, are currently undertaking numerous research projects addressing various aspects of filovirus biology with the goal of creating therapeutics, vaccines, and better diagnostic systems. However, this research is affected by the extreme risk filoviruses pose to laboratory workers—biosafety level 4 high-containment facilities are necessary for work with live agents. Several new facilities now under construction are planning to undertake defensive filovirus-research programs. Registered biosafety professionals will have to oversee these programs and ensure the safety of the scientists.

This year, experts Hans-Dieter Klenk of the Institute of Virology in Marburg, Germany, and Heinz Feldmann of the National Microbiology Laboratory in Winnipeg, Canada, edited a book addressing filovirus research. It is the first report on advances in the field of filovirus molecular biology since a similar volume by Klenk published in 1999.

*Ebola and Marburg Viruses—Molecular and Cellular Biology* consists of 12 chapters, all of which are written by eminent scientists who have published prolifically. The references only reach mid-2003, which explains why the taxonomy used for the viruses is out of date.

The book begins with an excellent introduction to the replication and transcription strategies of filoviruses, which is comprehensible and absorbing for students and professionals alike. The introduction is followed by several chapters that nicely describe the biosynthesis and function of the filoviral

surface glycoproteins. However, these chapters are partly repetitive. The chapter on filovirus cell entry, especially, seems to be too detailed considering the sparse and controversial literature on this subject, and could have been absorbed into the other chapters. A subsequent chapter on filovirus maturation is an excellent review of this rapidly advancing area of research. It is of special interest even for outsiders to this field since, next to HIV-1, filoviruses have become model systems for our understanding of viral egress. Likewise, the next chapter, which focuses on filoviral pathogenesis, is a high point because it contains a section that elaborates on the different methods that have been used in the field of experimental filovirus infections over the years, and on the resulting difficulty in comparing these studies.

At least two more outstanding chapters should be pointed out. An article by Russian researchers

presents new and unpublished experimental data on nonfatal filovirus infections in guinea pigs. It sheds light on the adaptation of viral strains that occurs during serial passaging. Similarly, a chapter describing the pathogenesis of filovirus disease in mice provides previously unknown data and contains a thorough discussion of the advantages and shortcomings of a recently developed murine model for filoviral hemorrhagic fevers.

Klenk and Feldmann's book is a rather expensive treatise on important aspects of our understanding of the dangerous ebola- and marburgviruses. Considering the price, one might expect more colored figures and pictures. Nevertheless, despite the minor shortcomings described in this review, this fascinating book is highly recommended to students, physicians, and researchers.

***IMPORTANT..... IMPORTANT..... IMPORTANT..... IMPORTANT***

A change of address notice should be sent at least 6 weeks in advance to the ABSA National Office to ensure that all mailings, including the journal, will reach you. ABSA is not responsible for misrouted mail as a result of insufficient notification of an address change. Undelivered copies resulting from an insufficient address change notification will not be replaced, but single issues may be purchased at the single issue price.

**CHANGE OF ADDRESS FORM**

Name \_\_\_\_\_

Old Address \_\_\_\_\_

Old Phone Number \_\_\_\_\_

NEW ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP +4 \_\_\_\_\_

NEW PHONE NUMBER \_\_\_\_\_

E-MAIL ADDRESS \_\_\_\_\_

Effective Date \_\_\_\_\_