

# Segmented Double-stranded RNA Viruses



## Structure and Molecular Biology

*Edited by: John T. Patton*

*Laboratory of Infectious Diseases, NIAID, NIH, Bethesda, MD 20892-8026, USA*

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The double-stranded (ds)RNA viruses represent a diverse group of viruses that vary widely in host range (humans, animals, plants, fungi, and bacteria), genome segment number (one to twelve), and virion organization (T-number, capsid layers, or turrets). Members of this fascinating group include the rotaviruses, renowned globally as the commonest cause of gastroenteritis in young children, and bluetongue virus, an economically important pathogen of cattle and sheep. In recent years, remarkable progress has been made in determining, at atomic and subnanometeric levels, the structures of a number of key viral proteins and of the virion capsids of several dsRNA viruses, highlighting the significant parallels in the structure and replicative processes of many of these viruses. By providing unique insights into fundamental aspects of structure-function relationships in virus particles, virus particle assembly, virus-cell interactions, and viral pathogenesis, approaches for the development of novel antiviral strategies and/or agents can be designed.

This timely book brings together all of the key recent research on this disparate group of viruses, providing for the first time a single resource reviewing dsRNA viral structure and molecular biology. Written by well respected and experienced virologists, topics include: the structures of orthoreoviruses, rotavirus, phytoreoviruses, and bluetongue virus, entry into the bacterial cell, crystal structure of reovirus polymerase  $\lambda$ 3, assembly of the reovirus genome, genomic RNA packaging and replication in the *Cystoviridae*, and much more. Essential reading for all dsRNA virologists and all other virologists with an interest in molecular and structural biology.

**Chapter 1.** The Structure of Orthoreoviruses. *Kelly A. Dryden, Kevin M. Coombs and Mark Yeager*

**Chapter 2.** Cypovirus. *Z. Hong Zhou*

**Chapter 3.** Rotavirus Structure. *Xiaofang Jiang, Sue E. Crawford, Mary K. Estes and B. V. Venkataram Prasad*

**Chapter 4.** Structure and Function of Bluetongue Virus and its Proteins. *Polly Roy*

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**Chapter 9.** Structural Basis of Mammalian Orthoreovirus Cell Attachment. *Pierre Schelling, Jacquelyn A. Campbell, Thilo Stehle and Terence S. Dermody*

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**Chapter 11.** Rotavirus Cell Entry. *Philip R. Dormitzer*

**Chapter 12.** Entry of a Segmented dsRNA Virus Into the Bacterial Cell. *Minna M. Poranen and Dennis H. Bamford*

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