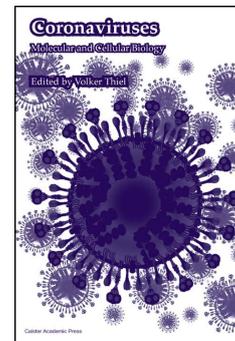


Coronaviruses

Molecular and Cellular Biology



Edited by: Volker Thiel

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Coronaviruses are positive-strand, enveloped RNA viruses that are important pathogens of mammals and birds. This group of viruses cause enteric or respiratory tract infections in a variety of animals including humans, livestock and pets. The important discovery in 2003 that the causative agent of severe acute respiratory syndrome (SARS) was a new, potentially lethal coronavirus named SARS-CoV provided major impetus to coronavirus research. SARS-CoV spread within months to more than 30 countries causing the first epidemic of the new millennium and becoming a public health nightmare in the countries affected.

In this timely book, internationally renowned experts review literally every aspect of cutting edge coronavirus research providing the first coherent picture of the molecular and cellular biology since the outbreak of SARS in 2003. The book is divided into two sections: Part I focuses on the molecular biology of the virus itself and includes topics such as coronavirus binding and entry, replicase gene function, cis-acting RNA elements, coronavirus discontinuous transcription, reverse genetics, genome packaging and molecular evolution. In Part II of the book, the focus is on molecular and cellular pathogenesis and infection control. This section includes reviews of the three prototype viruses, namely avian infectious bronchitis virus, feline coronavirus and mouse hepatitis virus. Other topics include SARS-CoV virus pathogenesis, SARS-CoV interaction with the host INF and antiviral cytokines, the newly recognized bat coronaviruses and human coronavirus NL63, and strategies for coronavirus vaccine development and the development of novel antiviral coronavirus agents.

Essential reading for all coronavirologists as well as scientists working on other viruses of the respiratory and/or gastrointestinal tract.

- Chapter 1.** Coronavirus Binding and Entry (*David E. Wentworth and Kathryn V. Holmes*)
- Chapter 2.** The Coronavirus Replicase Gene: Special Enzymes for Special Viruses (*John Ziebuhr and Eric J. Snijder*)
- Chapter 3.** Genomic Cis-Acting Elements in Coronavirus RNA Replication (*Paul S. Masters*)
- Chapter 4.** Coronavirus RNA Synthesis: Transcription (*Luis Enjuanes, Isabel Sola, Sonia Zuñiga, and J. L. Moreno*)
- Chapter 5.** Reverse Genetic Analysis of Coronavirus Replication (*Volker Thiel*)
- Chapter 6.** Coronavirus Genome Packaging (*Krishna Narayanan and Shinji Makino*)
- Chapter 7.** Molecular Evolution of Group 2 Coronaviruses (*Leen Vijgen, Els Keyaerts, and Marc Van Ranst*)
- Chapter 8.** Avian Coronavirus Diseases and Infectious Bronchitis Vaccine Development (*Paul Britton and Dave Cavanagh*)
- Chapter 9.** Feline Coronaviruses: A Tale of Two-Faced Types (*Bert Jan Haijema, Peter J.M. Rottier, and Raoul J. de Groot*)
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- Chapter 14.** SARS and Other 'New' Coronaviruses (*Leo L.M. Poon*)
- Chapter 15.** Human Coronavirus NL63, a Long Lost Brother (*Krzysztof Pyrc and Lia van der Hoek*)
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