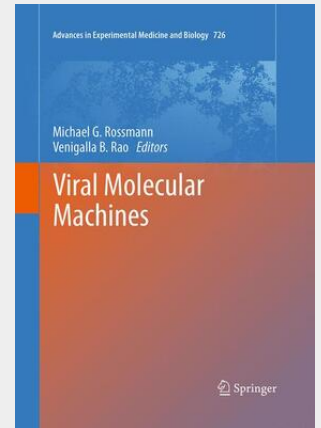


## Viral Molecular Machines

This book will contain a series of solicited chapters that concern with the molecular machines required by viruses to perform various essential functions of virus life cycle. The first three chapters (Introduction, Molecular Machines and Virus Architecture) introduce the reader to the best known molecular machines and to the structure of viruses. The remainder of the book will examine in detail various stages of the viral life cycle. Beginning with the viral entry into a host cell, the book takes the reader through replication of the genome, synthesis and assembly of viral structural components, genome packaging and maturation into an infectious virion. Each chapter will describe the components of the respective machine in molecular or atomic detail, genetic and biochemical analyses, and mechanism. Topics are carefully selected so that the reader is exposed to systems where there is a substantial infusion of new knowledge in recent years, which greatly elevated the fundamental mechanistic understanding of the respective molecular machine. The authors will be encouraged to simplify the detailed knowledge to basic concepts, include provocative new ideas, as well as design colorful graphics, thus making the cutting-edge information accessible to broad audience.

A biological organism can be viewed as a collection of molecular machines well integrated to function as a self-replicating unit. One of the principal goals in biology is to be able to fully understand the mechanisms of an organism in atomic detail. Viruses offer the best opportunities to achieve this goal. Written by leaders in the respective fields, this book examines a variety of viral molecular machines, using the best examples from bacteriophages and animal viruses, many causing infectious diseases of public health importance. Beginning with the viral entry into a host cell, the book takes the reader through replication of the genome, assembly of structural components, genome packaging and maturation into an infectious virion. The book conveys the state of the art knowledge of the topic generated by combining X-ray crystallography, high resolution electron microscopy, molecular genetics, biochemistry, and single molecule biophysics. Viral Molecular Machines is not only a "must-have" book for virologists but it will also be broadly useful for molecular biologists in academia and industry as well as an educational tool for teaching graduate and upper level undergraduate students.



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