

Virus^{as} Populations

Composition, Complexity, Quasispecies,
Dynamics, and Biological Implications

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Second Edition

The second edition of *Virus as Populations: Composition, Complexity, Quasispecies, Dynamics, and Biological Implications*, explains fundamental concepts that arise from regarding viruses as complex populations when replicating in infected hosts. Fundamental phenomena in virus behavior, such as adaptation to changing environments, capacity to produce disease, probability to be transmitted, or response to treatment, depend on virus population numbers. The book covers concepts such as quasispecies dynamics, mutations rates, viral fitness, the effect of bottleneck events, and population numbers in virus transmission and disease emergence. It also examines new antiviral strategies such as lethal mutagenesis, and extensions of population heterogeneity to nonviral systems. The main concepts of the book are framed in recent observations on general virus diversity derived from metagenomic studies and current views on the origin of viruses and the role of viruses in the evolution of the biosphere. *Virus as Populations* is essential reading and an authoritative guide for virologists, evolutionary biologists, population geneticists, and any others engaged in researching this fascinating topic.

Key Features

- Features current views on the key steps in the origin of life and origins of viruses
- Includes examples relating ancestral features of viruses with their current adaptive capacity
- Explains complex phenomena in an organized and coherent fashion that is easy to comprehend and enjoyable to read
- Considers quasispecies as a framework to understand virus adaptability and disease processes
- Introduces the chemical basis of mutations and their impact on viral dynamics
- Emphasizes parallel features between viral dynamics and some heterogeneous cell populations and prions

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