

Virus^{as} Populations

Composition, Complexity, Dynamics, and Biological Implications

Esteban Domingo



From left to right: Isabel Gallego, Ana Isabel de Avila, Celia Perales and Esteban Domingo during a discussion of a figure for the book at Centro de Biología Molecular Severo Ochoa (photography by José Antonio Pérez Gracia)

Virus as Populations: Composition, Complexity, 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 and in the variations of such population numbers. Concepts such as quasispecies dynamics, mutations rates, viral fitness, the effect of bottleneck events, population numbers in virus transmission and disease emergence, new antiviral strategies such as lethal mutagenesis, and extensions of population heterogeneity

to nonviral systems are included. These 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.

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



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