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Altri autori (Persone)	StockleyPeter G TwarockReidun
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Nota di contenuto	Contributors; Preface; Contents; Chapter 1: Cryo-Electron Microscopy of Viruses Neil A. Ranson and Peter G. Stockley; 1. Introduction; 2. The Cryo-EM Technique; 3. Determining the 3-D Structure of Viruses from EM Data; 4. Complementarity between Cryo-EM versus X-ray Methods; 5. Structure of Large Enveloped Viruses; 6. Virus - Receptor Interactions; 7. Maturation Processes; 8. Structural Information on Packaged Genomes; 9. Prospects for Cryo-EM of Viruses at Atomic Resolution; 10. Pleiomorphic Viruses and the Power of Cryo-Electron Tomography; 11. Conclusions; References Chapter 2: What Does it Take to Make a Virus: The Concept of the Viral 'Self' Nicola G. A. Abrescia, Jonathan M. Grimes, Elizabeth E. Fry, Janne J. Ravantti, Dennis H. Bamford and David. I. Stuart1. Introduction; 2. Towards the Concept of Viral Lineage?; 3. The Double-Barrel Paradigm Lineage; 4. Picorna-Like Group - Single Barrel, Single Lineage?; 5. More Phages, a Different Lineage; 6. dsRNA Genome - A Constraint on

Architecture?; 7. Enveloped Viruses - Infectious Vesicles?; 8. The Viral Self and Emerging Viruses; 9. Conclusions; Acknowledgements; References

Chapter 3: Beyond Quasi-Equivalence: New Insights Into Viral Architecture via Affine Extended Symmetry Groups Thomas Keef and Reidun Twarock1. Introduction - Symmetry in Virus Architecture; 2. The Surface Structures of Viral Capsids: Viral Tiling Theory; 2.1. Quasi-Equivalent Tessellations Beyond Triangulations; 2.2. All-Pentamer Capsids in Viral Tiling Theory; 3. Generalisation of the Symmetry Group via Affine Extension; 4. Applications to Viruses; 4.1. Prediction of Particle Sizes in Assembly Polymorphism; 4.2. Prediction of Genome Organisation; 4.3. Predictions of Protein Structure

4.4. Implications for Viral Dynamics5. Beyond Virology: Applications to Protein Assemblies with Symmetry; 6. Concluding Remarks -Why is Symmetry Fundamental in Virology?; Acknowledgements; References;

Chapter 4: Mechanical Properties of Viruses Wouter H. Roos and Gijs J. L. Wuite; 1. Introduction; 2. Nanoindentation by AFM; 2.1. Sample Preparation; 2.2. Imaging; 2.3. Indenting; 3. Comparing Viral Material Properties; 3.1. Assembly Around the Genome versus Use of a Packaging Motor; 3.2. Influence of Encapsidated Material on Viral Mechanical Properties; 3.3. Capsid Failure; 3.4. Maturation 3.5. Protein Engineering of Capsids4. Conclusions and Outlook; Acknowledgements; References;

Chapter 5: Investigating Viral Structure, Function and Dynamics with Mass Spectrometry Eric B. Monroe and Peter E. Prevelige; 1. Introduction; 2. Mass Spectrometry Overview; 3. The -omics of Viruses; 4. Macromolecular Mass Spectrometry; 5. Structural Studies; 6. Viral Dynamics; 7. Conclusions; References;

Chapter 6: An Overview of Capsid Assembly Kinetics J. Zachary Porterfield and Adam Zlotnick; 1. Introduction; 2. Modeling Assembly; 2.1. Stepwise Assembly

2.2. Contributions of Alternative Pathways to Stepwise Assembly

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### Sommario/riassunto

""Emerging Topics in Physical Virology"" is a state-of-the-art account of recent advances in the experimental analysis and modeling of structure, function and dynamics of viruses. It is the first interdisciplinary book that integrates a review of relevant experimental techniques, such as cryo-electron microscopy, atomic force microscopy and mass spectrometry with the latest results on the biophysical and mathematical modeling of viruses. The book comprehensively covers the structure and physical properties of the protein envelopes that encapsulate and hence protect the delicate viral genome, t

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