

CONTENTS

Contributors	•	ix
Preface	•	xiii

I. Introduction to Picornavirus Biology

1. Genome Organization and Encoded Proteins • 3
Ann Palmenberg, David Neubauer, and Tim Skern
2. Overview of Taxonomy • 19
Nick J. Knowles, Tapani Hovi, Andrew M. Q. King, and Glyn Stanway
3. The Making of a Picornavirus Genome • 33
Eckard Wimmer and Aniko V. Paul

II. Virion Structure and Cell Entry and Assembly

4. Virion Structure • 59
Elizabeth E. Fry and David I. Stuart
5. Receptors • 73
Jeffrey M. Bergelson
6. Cell Entry: a Biochemical and Structural Perspective • 87
Hazel Levy, Mihnea Bostina, David J. Filman, and James M. Hogle

III. Genome Replication and Translation

7. Genome Replication I: the Players • 107
Janet M. Rozovics and Bert L. Semler
8. Genome Replication II: the Process • 127
Karla Kirkegaard and Bert L. Semler
9. Translation and Protein Processing • 141
Encarna Martínez-Salas and Martin D. Ryan

IV. Alterations of Host Cell Function

10. Interference with Cellular Gene Expression • 165
Jonathan D. Dougherty, Nogi Park, Kurt E. Gustin, and Richard E. Lloyd
11. Remodeling Cellular Membranes • 181
Frank van Kuppeveld, George Belov, and Ellie Ehrenfeld

V. Evolution and Mechanisms

12. Mutation, Quasispecies, and Lethal Mutagenesis • 197
Esteban Domingo, Celia Perales, Rubén Agudo, Armando Arias, Cristina Escarmís, Cristina Ferrer-Orta, and Nuria Verdaguer
 13. Biological Implications of Picornavirus Fidelity Mutants • 213
Marco Vignuzzi and Raul Andino
 14. Recombination in the Evolution of Picornaviruses • 229
Peter Simmonds
 15. Picornaviruses as a Model for Studying the Nature of RNA Recombination • 239
Vadim I. Agol
 16. Origin and Evolution of the *Picornaviridae* Proteome • 253
Alexander E. Gorbalenya and Chris Lauber
 17. Codon Biases and Viral Fitness • 271
Albert Bosch, Steffen Mueller, and Rosa M. Pintó
- ### VI. Immune Response and Persistence
18. Innate Immune Responses • 287
Vincent R. Racaniello

19. Adaptive Immune Responses • 303
*Christopher C. Kemball, Robert S. Fujinami,
and J. Lindsay Whitton*

20. Persistent Infections • 321
Florence Colbère-Garapin and Howard L. Lipton

VII. Pathogenesis of Disease

21. Poliomyelitis • 339
Satoshi Koike and Akio Nomoto

22. Group B Coxsackievirus
Diseases • 353
Steven Tracy and Nora M. Chapman

23. Rhinovirus and Respiratory
Disease • 369
Marc B. Hershenson

24. Hepatitis A Virus • 383
Zongdi Feng and Stanley M. Lemon

25. Foot-and-Mouth Disease • 397
*Marvin J. Grubman, Luis L. Rodriguez, and Teresa
de los Santos*

26. Theiler's Virus Central Nervous System
Infection • 411
Thomas Michiels and Raymond P. Roos

VIII. Disease Prevention and Treatment

27. Vaccine Strategies • 431
David J. Rowlands and Philip D. Minor

28. The Poliovirus Eradication
Initiative • 449
Konstantin Chumakov and Olen Kew

29. Antiviral Drugs • 461
Armando M. De Palma and Johan Neyts

Index • 483