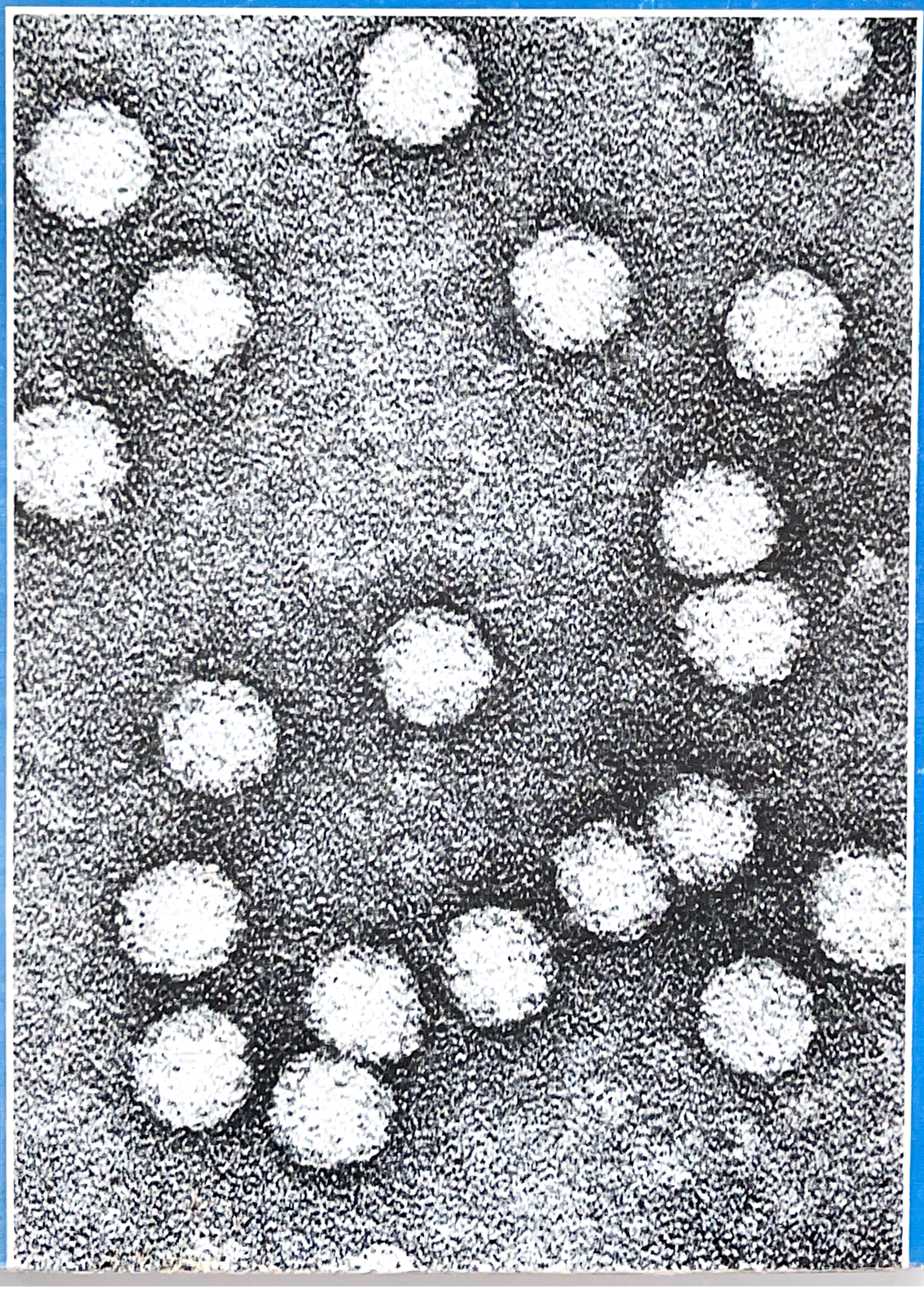
Replication of Mammalian Parvoviruses



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Cover: Particles of minute virus of mice, approximately 250 Å in diameter (electron micrograph courtesy of Peter Tattersall).

Preface

Detailed studies of the structure and replication of bacteriophage genomes, such as those of øX174 and λ, have revealed many fundamental principles of prokaryotic biology. In a similar fashion, in-depth analyses of simple animal virus systems should help to unravel the molecular complexities of the eukaryotic cell. One such group of potential probes are the parvoviruses. This family of small, icosahedral viruses contains linear single-stranded DNA genomes of only 1.4–2.2 $\times$ 10^6 daltons and infects hosts as diverse as man and moth. This volume deals with the mammalian parvoviruses which comprise both nondefective viruses and the defective adeno-associated viruses.

The picture emerging of the parvovirus chromosome is that it encodes a very small number of genes, perhaps only the one for its coat protein, and, in addition, all the control signals required to redirect its host cell to the predominant, if not exclusive, function of producing progeny virus. The limited genetic capacity of these viruses is reflected in their extreme dependence upon host-cell or helper-virus functions. This makes them particularly suitable for the detailed investigation of eukaryotic DNA replication and of the control of gene expression during differentiation and neoplastic transformation.

Part I of this book provides an introduction to the mammalian parvoviruses and briefly reviews some interesting facets of their biology, structure, and mode of replication. Part II contains a comprehensive collection of previously unpublished papers most of which were presented during the Cold Spring Harbor meeting on Parvoviruses in May, 1977. Topics covered in these articles include the specificity of virus-cell interactions, the role of host-cell or helper-virus functions in the replication process, genome structure, mechanism of DNA replication, transcription, translation, properties of the structural polypeptides, and virion maturation.

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