

PREFACE

Virology is a field of study which has grown and expanded greatly since the viruses as a group first received their name in 1898. Many of the people who presently are learning virology have come to perceive these acellular biological entities as being merely trinkets of nucleic acid to be cloned, probed, and spliced. However, the viruses are much more than merely trinkets to be played with in molecular biology laboratories. The viruses are indeed highly evolved biological entities with an organismal biology that is complex and interwoven with the biology of their hosting species. Ecology is defined as the branch of science which addresses the relationships between an organism of interest and the other organisms with which it interacts, the interactions between the organism of interest and its environment, and the geographical distribution of the organism of interest.

The purpose of this book is to help define and explain the ecology of viruses, i.e., to examine what life might seem like from a

"virocentric" point of view, as opposed to our normal "anthropocentric" perspective. As we begin our examination of the virocentric life, it is important to realize that in nature both the viruses of macroorganisms and the viruses of microorganisms exist in cycles with their respective hosts. Under normal conditions, the impact of viruses upon their natural host populations may be barely apparent due to factors such as evolutionary coadaptation between the virus and those natural hosts. However, when viruses find access to new types of hosts and alternate transmission cycles, or when they encounter a concentrated population of susceptible genetically similar hosts such as occurs in densely populated human communities, communities of cultivated plants or animals, or algal blooms, then the impact of the virus upon its host population can appear catastrophic. The key to understanding these types of cycles lies in understanding the viruses and how their ecology relates to the ecology of their hosts, their alternate hosts, and any vectors which

they utilize, as well as their relationship to the availability of suitable vehicles that can transport the different viral groups.

I hope that you will enjoy the information presented in this book set as much as I and the other authors have enjoyed presenting it to you.

The written word is a marvelous thing, able to convey understanding and enthusiasm across unimaginable distances and through time.

CHRISTON J. HURST
Cincinnati, Ohio

PREFACE

"Virology," "point of view," as opposed to a normal "subject-oriented" perspective. As we begin our examination of the virology field, it is important to realize that in recent years the viruses of macroorganisms and the viruses of microorganisms exist in species with their respective hosts. Under normal conditions, the impact of viruses upon their natural host populations may be barely apparent due to factors such as evolutionary adaptation between the virus and those natural hosts. However, when viruses find access to new types of hosts and maintain population cycles, or when they encounter a concentrated population of susceptible genetically similar hosts such as occur in densely populated human communities, or in nurseries of cultivated plants or animals, or in the blood, then the impact of the virus upon the host population can appear catastrophic. The key to understanding these types of cycles lies in understanding the viruses and how they ecology relates to the ecology of their hosts, their alternate hosts, and any vector which

Virology is a field of study which has grown and expanded greatly since the viruses as a group first received their name in 1892. Many of the people who presently are learning virology have come to perceive these acellular biological entities as being merely fractions of nuclear acid to be cloned, probed, and spliced. However, the viruses are much more than merely fractions to be played with in molecular biology laboratories. The viruses are indeed highly evolved biological entities with an organismal biology that is complex and intertwined with the biology of their host species. Virology is defined as the branch of science which addresses the relationship between an organism of interest and the other organisms with which it interacts, the interaction between the organism of interest and its environment, and the geographical distribution of the organism of interest. The purpose of this book is to help define and explain the ecology of viruses, i.e., to examine what life might seem like from a