Preface

Virology is a fascinating and rapidly developing subject, and is worthy of study purely because viruses are interesting! Furthermore, virology is a branch of science that is of immense relevance to mankind for a host of reasons, not least of which are the threats to human health caused by viruses, such as HIV, hepatitis B virus, papillomaviruses, measles and influenza viruses, to mention just a few. There is a continuing need for trained virologists, and it is hoped that this book will play a small role in helping to fulfil this need. To a large extent the material in the book is based on virology taught at Liverpool John Moores University.

This is not a textbook of fundamental virology, medical virology, veterinary virology, plant virology or of bacteriophages, but a bit of each of these! The general pattern of the book is that principles of virology are covered earlier and applications are covered later. There is no strict demarcation between the two, however, so the reader may be made aware of important applications while principles are being introduced.

The first 10 chapters cover basic aspects of virology. A chapter on methods used in virology comes early in the book, but could be skimmed to gain an overview of its contents and thereafter used for reference. There is one chapter on each of the seven Baltimore classes, concentrating mainly on animal viruses. There is a chapter devoted entirely to HIV and an extended chapter on phages, reflecting the renewed interest in their biology and applications. After a chapter on origins and evolution of viruses, there follow five chapters covering various aspects of applied virology, including vaccines and antiviral drugs. The final chapter is on prions, which are not viruses but are often considered along with the viruses.

Each chapter starts with '*At a glance*', a brief summary with the dual aim of giving a flavour of what is coming up and providing a revision aid. Each chapter ends with a list of learning outcomes and a guide to further reading in books and journals. The references are mainly from the 21st century, but there is a selection of important papers from the last century.

The book has a web site (www.wiley.com/go/carter), where you can find

- many references additional to those in the book;
- links to the journal references (to the full text where this is freely available, otherwise to the abstract);
- links to virology web sites;
- self-assessment questions and answers for each chapter, to reinforce and extend concepts developed in the book.

A key feature of our book is a standard colour code to differentiate various types of nucleic acid and protein molecule in the diagrams. The colour code is explained on page xxiii. It is appreciated that colour coding may be of limited value to individuals who have difficulty in differentiating colours, so we have also labelled many of the molecules.

A number of virus replication cycles are described and the reader should be aware that these are models based on evidence to date; the models may have to be modified in the light of future evidence. We present the virus replication cycles as fitting within a general framework of seven steps:

(1) Attachment of a virion to a cell

(2) Entry into the cell

(3) Transcription of virus genes into mRNAs

(4) Translation of virus mRNAs into virus proteins

(5) Genome replication

(6) Assembly of the virus proteins and genomes into virions

(7) Exit of the virions from the cell.

We hope that this helps in appreciating how virus replication fits into a general pattern and in comparing the replication cycles of different types of virus. For some groups of viruses the framework has to be modified and we make clear when this is the case.

If you come across an unfamiliar term, please consult the 'Virologists' vocabulary' at the back of the book. This glossary includes not only virology-specific terms, but also a selection of terms from cell biology, molecular biology, immunology and medicine.

A list of the abbreviations that are used in this book appears on the following pages.

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We hope you find the book useful and we would be interested to hear what you think of it. We have tried to ensure that there are no errors, but it is probable that some have slipped through; if you come across any errors please inform us.

John B. Carter
J.B.Carter@ljmu.ac.uk

Venetia A. Saunders
V.A.Saunders@ljmu.ac.uk

School of Biomolecular Sciences,
Liverpool John Moores University,
Byrom Street,
Liverpool L3 3AF, UK