

Preface

Almost a decade has passed since the publication of the first edition of *The Molecular Biology of Tumour Viruses*. In the interim, so much has happened in the field of tumor virology that the current volume can only dimly be viewed as a revision of the first. In the first edition, RNA tumor viruses commanded about 200 pages of the 700 or so in the entire volume; now RNA tumor viruses (or, more properly, retroviruses) require a massive volume of their own, with almost 1400 pages of text and appendixes. This profusion of information has required an editorial consortium, a large collection of authors and critics, and a major effort by the Cold Spring Harbor Publications staff to assemble a monograph that is almost entirely new, but one, we hope, that preserves the qualities that made the first edition so useful for both new and old members of the tumor virus community. Of the material appearing in the first edition, only a little remains—some historical perspectives to be found in Chapter 1 and a scattering of figures and tables throughout the remainder of the book.

The enthusiasm required to assemble this large book has been fired by remarkable progress during the past several years in efforts to describe the major biochemical and genetic features of the curious viruses we study: the organization of viral RNA and proviral DNA; the strategies for viral replication and gene expression; the nature and origin of viral transforming genes; and the structure and function of endogenous viral genomes. Although retroviruses are dauntingly numerous and some isolates disconcertingly idiosyncratic, the gratifying theme that has pervaded the work of the past decade is one of unity of design. It is that theme that we have exploited in the construction of this book. Thus, we have emphasized conceptual rather than taxonomic categories in the choice of chapter topics, in the belief that the occasional exceptions to the general rules are more usefully discussed in the context of accounts of how most retroviruses work. The rapid expansion of our information about retroviruses, particularly since the introduction of recombinant DNA and DNA sequencing methods, has been sufficiently great to forbid a graceful blending of all the pertinent facts within the text. To remedy this situation, we have appended compilations of restriction endonuclease maps of viral genomes and of nucleotide and amino acid sequences.

A word should be said about the manner in which we expect this book to be used. We have attempted to create a text that will meet the needs of students learning about retroviruses for the first time and of working scientists—both those who are new to the field and those who have grown up with it. To achieve such general utility, we have had to sacrifice the virtue

of brevity. Thus, for the uninitiated, we have provided the historical and experimental perspectives that nurtured the theoretical conclusions and factual detail now available; and, for the expert, we have provided the inclusive descriptions, bibliographies, and information relevant to current experimentation as appropriate for a standard reference work. To diminish the dangers of making this book all things to all people, we have copiously subdivided the chapters and listed the subdivisions at the start of each chapter, abstracted much of the detailed material into tables within chapters and placed the rest in the appendixes, and provided a detailed index that should facilitate, in particular, the retrieval of information about individual viruses from chapters organized around conceptual principles. What emerges is not a text to be read from cover to cover, but one that can be readily dissected into components germane to readers with different backgrounds and different demands. For example, each chapter begins with an overview that should serve as an introduction to its central ideas and as a guide to further reading within the chapter or elsewhere. To minimize overlaps, we have made abundant use of cross-references between chapters. Several figures and tables, in addition to the Appendixes, should be helpful throughout the book. These include Tables 2.3 (a list of retroviruses), 4.1 (viral genes), 6.1 (viral proteins), and 9.1 (*onc* genes); Figures 4.1 (genome structures), 5.1 (the replication cycle), and 6.1 (proteins and virion structure); and the tables following Chapter 7 (a catalog of viral mutants).

We have considered it appropriate to designate by name the individuals chiefly responsible for the composition of each of the chapters (other than Chapter 1, which was derived mainly from Chapter 1 of the first edition). However, we have also attempted to make this book one that reflects the consensus of the community of retrovirologists; to this end, we have relied heavily upon short contributions to, and critical readings of, most of these chapters by many of our colleagues. We hope to have obtained from this wide participation the balanced viewpoints that should characterize the standard reference text in a field as diverse as our own.

Compensation for working on a production such as this is never equal to the task; all we can offer is our sincere gratitude to those who contributed to it in one way or another. Many of the named authors made significant, unattributed contributions to other chapters, and several other colleagues helped with drafts that become obsolete with the passage of time or wrote (or rewrote) short portions of the various chapters that now appear. Among these otherwise unsung contributors are David Baltimore, Karen Beemon, Henry Bose, June East, Ray Erikson, Ashley Haase, Nancy Hogg, Wally Mangel, Jim Neil, Roel Nusse, Gordon Peters, Naomi Rosenberg, David Steffen, George Vande Woude, and Lu-Hai Wang. Detailed editorial assistance was provided by too many colleagues to list, but the special efforts of several (Bob Weinberg, John Wyke, Chuck Sherr, Harriet Robinson, and Craig Cohen) deserve special mention. Even the extraordinary persistence

of Steve Hughes in compiling the appendixes would have been insufficient without the cooperation of many colleagues, especially Dennis Schwartz, Chuck Van Beveren, Tom Shinnick, Steve Oroszlan, and others, who provided unpublished and annotated maps and sequences. We are also indebted to Betsy Matthews for assembling the index, to Audrey Gibson for typing a large portion of the text, and to Audrey Symons, Gerry Leach, Mike Ockler, and Fran Cefalu for producing the excellent graphics. Last, but far from least, we are grateful to Nancy Ford and members of her staff (Dorothy Brown, Judy Cuddihy, Joan Ebert, Gail Anderson) for their patience and extraordinary editorial skills, displayed throughout this long and arduous undertaking. Without their conviction that there would one day be a complete product, this volume would probably not exist.

The Editors