PREFACE

What has happened in the field of genetics since the publication of the Second Edition of this Dictionary is nothing short of spectacular. The first restriction enzyme that cuts DNA at specific sites was discovered in 1970, and by 1972 the first recombinant DNA molecules had been generated. The next year, genetically engineered plasmids had been functionally cloned in a bacterium. The possibilities for manipulating heredity and perhaps creating potentially dangerous novel microorganisms by this new technology caused concerned scientists to call for a worldwide moratorium (at the famous Asilomar conference of 1975) on certain classes of such experiments. In 1977, recombinant DNA technology went commercial, eukaryotic genes were found to contain noncoding regions (introns), and procedures for rapid DNA sequencing became available.

This rapid evolution of scientific knowledge and technical applications has created a burgeoning vocabulary of new terminology, most of which is not to be found in standard collegiate dictionaries or even dictionaries of biology. One can hardly read a few lines of current journal articles in genetics or related fields before encountering one or more new words from the jargon of molecular genetics. This deeper understanding of genetics has had ramifications into all of the disciplines in the biological sciences, especially those of microbiology, ecology, systematics, and evolution, as well as into the applied disciplines of medicine and agriculture. Furthermore, one must be well versed in physics and biochemistry (especially nucleic acid enzymology) in order to appreciate the kinds of techniques and instrumentation utilized in the synthesis, purification, and analysis of nucleic acids and proteins. Since it is difficult for the nonspecialist to keep abreast of the advances in all of these fields, the scope of this Third Edition has been expanded to reflect the broadly interdisciplinary nature of modern genetics. The use of acronyms has become very popular as a means of rapid communication, both orally and in scientific writings. Therefore, an attempt has been made to identify some of the more commonly employed acronyms (e.g., **HAT medium, HLA antigens, kbp, PAGE,** etc.).

Sometimes research reports and other technical references cite scientific names of species and genera that are experimentally manipulated by geneticists without specifying whether the organism is a grass, a wasp, or a rodent. To aid the non-

specialist in this regard, this Dictionary lists those species and genera that have been extensively studied either because of their economic importance or because they provide certain useful advantages for studying specific genetic problems. In the later case, a brief description of these advantages is given. The reader can find where a species fits into the classification of living organisms by referring to Appendix A and can find the scientific names of common domesticated species in Appendix B.

The Third Edition has grown considerably. The number of definitions has increased from 3,800 in the Second Edition to 5,920, and the number of illustrations from 172 to 225. The classification presented as Appendix A has been revised to follow Whittaker's five kingdom systems. Appendix B contains the common and scientific names of about 200 domesticated species. In Appendix C a Chronology of events important to the development of genetics begins with the invention of the compound microscope in 1590 and ends with the Nobel Prize laureates of 1984. The number of entries in the Chronology (Appendix C) has grown from 360 to 560, and an index has been added containing the names of over 800 scientists cited. A bibliography of major sources for the Chronology is also part of Appendix C. A list of periodicals cited in the literature of genetics, cytology, and molecular biology (Appendix D) has increased from 323 to 393 entries.

Certain rules have been followed regarding the arrangement of definition entries. Each is placed in alphabetical order using the bold face title letter by letter, while ignoring spaces between words. Thus **S phase** is placed between ***Sphaerocarpus*** and **spherocytic anemia.** Identical alphabetical listings are entered so that lower case letters precede upper case letters. Thus the **r** entry comes before the **R** entry. In titles beginning with a Greek letter, the letter is spelled out. Thus **λ phage** is found under **lambda phage.** In titles starting with a number or containing numbers, the numbers are ignored in the alphabetical placement. Thus **M5 technique** is treated as **M technique** and **T24 oncogene** as **T oncogene.** However, numbers are used to determine the order in a series, *e.g.,* **4S, 5S,** and **5.8S RNA.** When looking for a two word term, if you don't find the definition listed under the first word, try the second. For example, definitions for **genetic recombination** and **beta thalassemia** occur under **recombination** and **thalassemias,** respectively.

The authors would appreciate being informed of errors of commission and/or omission, and welcome suggestions for improvements so that these might be included in any subsequent printings or editions.

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