In this third edition of his popular undergraduate-level textbook, Desmond Nicholl recognises that a sound grasp of basic principles is vital in any introduction to genetic engineering. Therefore, as well as being thoroughly updated, the book also retains its focus on the fundamental principles used in gene manipulation. The text is divided into three sections: Part I provides an introduction to the relevant basic molecular biology; Part II, the methods used to manipulate genes; and Part III, applications of the technology. There is a new chapter devoted to the emerging importance of bioinformatics as a distinct discipline. Other additional features include text boxes, which highlight important aspects of topics discussed, and chapter summaries, which include aims and learning outcomes. These, along with key word listings, concept maps, and a glossary, will enable students to tailor their studies to suit their own learning styles and ultimately gain a firm grasp on this subject that students traditionally find difficult.

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An Introduction to Genetic Engineering
Third Edition

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Preface to the third edition

As I found when preparing the second edition of this text, advances in genetics continue to be made at an ever increasing rate, which presents something of a dilemma when writing an introductory text on the subject. In the years since the second edition was published, many new applications of gene manipulation technology have been developed, covering an increasingly diverse range of disciplines and applications. The temptation in preparing this third edition, as was the case for its predecessor, was to concentrate on the applications and ignore the fundamental principles of the technology. However, in initial preparation I was convinced that a basic technical introduction to the subject should remain the major focus of the text. Thus, some of the original methods used in gene manipulation have been kept as examples of how the technology developed, even though some of these have become little used or even obsolete. From the educational point of view, this should help the reader cope with more advanced information about the subject, as a sound grasp of the basic principles is an important part of any introduction to genetic engineering. I have again been gratified by the many positive comments about the second edition, and I hope that this new edition continues to serve a useful purpose as part of the introductory literature on this fascinating subject.

In trying to strike a balance between the methodology and the applications of gene manipulation, I have retained the division of the text into three sections. Part I deals with an introduction to basic molecular biology, Part II with the methods used to manipulate genes, and Part III with the applications. These sections may be taken out of order if desired, depending on the level of background knowledge. Apart from a general revision of chapters retained from the second edition, there have been some additional changes made. The emerging importance of bioinformatics as a distinct discipline is recognised by a new chapter devoted to this topic. To help the student of genetic engineering, two additional features have been included. Text boxes highlight some of the important aspects of the topics, and chapter summaries have been provided, which include aims and learning outcomes along with a listing of key words. Along with the concept maps, I hope that these additions will help the reader to make sense of the topics and act as a support for studying the content. By using the summaries, key words, text boxes, and concept maps students should be able to tailor their study to suit their own individual learning styles. I hope that the changes have produced a balanced treatment of the field, whilst retaining the introductory nature of the text and keeping it to a reasonable length despite an overall increase in coverage.
PREFACE TO THE THIRD EDITION

My thanks go to my colleagues Peter Birch and John McLean for comments on various parts of the manuscript, also to Don Powell of the Wellcome Trust Sanger Institute for advice and critical comment on Chapter 9. Their help has made the book better; any errors of fact or interpretation of course remain my own responsibility. Special thanks to Katrina Halliday and her colleagues at Cambridge University Press, and to Katie Greczylo of Aptara, Inc., for their cheerful advice and patience, which helped bring the project to its conclusion. My final and biggest thank-you goes as ever to my wife, Linda, and to Charlotte, Thomas, and Anna. They have again suffered with me during the writing, and have put up with more than they should have had to. I dedicate this new edition to them, with grateful thanks.

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