

Preface

The first edition of this book was published in 2002. By the time of the second edition (2007) the emphasis had moved away from just cloning genes, to embrace a wider range of technologies, especially genome sequencing, the polymerase chain reaction and microarray technology. The revolution has continued unabated, indeed even accelerating, not least with the advent of high-throughput genome sequencing. In this edition we have tried to introduce readers to the excitement engendered by the latest developments – but this poses a considerable challenge. Our aim has been to keep the book to an accessible size, so including newer technologies inevitably means discarding some of the older ones. Some might maintain that we could have gone further in that direction. Some methods that have been kept are no longer as important as they once were, and maybe there is an element of sentimentality in keeping them – but there is some virtue in retaining a balance so that we can maintain a degree of historical perspective. There is a need to understand, to some extent, how we got to the position we are now in, as well as trying to see where we are going.

The main title of the book, *From Genes to Genomes*, is derived from the progress of this revolution. It also indicates a recurrent theme within the book, in that the earlier chapters deal with analysis and investigation at the level of individual genes, and then later on we move towards genome-wide studies – ending up with a chapter directed at the whole organism.

Dealing only with the techniques, without the applications, would be rather dry. Some of the applications are obvious – recombinant product formation, genetic diagnosis, transgenic plants and animals, and so on – and we have attempted to introduce these to give you a flavour of the advances that continue to be made, but at the same time without burdening you with excessive detail. Equally important, possibly more so, are the contributions made to the advance of fundamental knowledge in areas such as developmental studies and molecular phylogeny.

The purpose of this book is to provide an introduction to the concepts and applications of this rapidly moving and fascinating field. In writing it, we had in mind its usefulness for undergraduate students in the biological and biomedical sciences (who we assume will have a basic grounding in molecular biology). However, it will also be relevant for many others, ranging from research workers and teachers who want to update their knowledge of related areas to anyone who would like to understand rather more of the background to current controversies about the applications of some of these techniques.

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