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This book provides a series of practical demonstrations, that may be undertaken by students themselves, to illustrate some of the fundamental concepts of genetics. It is aimed at first year undergraduates with questions and answers on each demonstration and topics. The authors find themselves in the curious position of having to defend the use of practical laboratory work in courses on genetics which they do clearly and succinctly. The book was first published in 1951 and is now in its 10th edition and therefore clearly has found a niche in this particular market. No doubt the book has evolved a great deal since the first edition but unfortunately some mutations have crept in over this period of time.

In the chapter on "Linkage and Crossing-Over" somatic recombination is explained in great detail in the section on human gene mapping. Other approaches (for example, in situ hybridisation) are dealt with in one line—surely unnecessary in an otherwise excellent textbook published in 1995. In the chapter on "Human Chromosomes" the chromosome pairs 17 and 18 are transposed in one figure (Fig 11.3) and the ISCN karyotype for K 365 for the syndrome is incorrectly given as 47XY, X+ rather than 47XX. In the same chapter the cytogenetic consequences of the presence of the Philadelphia chromosome, observed in chronic myeloid leukaemia, are incorrectly described.

One is left with the impression that some parts of this book may have evolved faster than others. The book would appear to be a useful source for classic genetic experiments but care should be exercised in relying upon it as a source of instruction and information in those areas undergoing rapid development, such as human gene mapping, which will benefit from revision for the next edition.

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Dr Barns and Gillett comment: We thank Dr Tatre for his interest in our editorial. He is obviously a keen proponent of the AgNOR technique; however, the value of AgNORs in pathology remains controversial, as denoted by the large number of conflicting publications. In response to his four points, we would like to confirm our original points.

The accurate identification of AgNORs is highly dependent upon tissue preparation and manual counting. Errors due to poor deposition and hence loss of NOR definition can occur as a result of variations in tissue thickness, the use of different fixatives and protocols and fixation times. These features also affect the amount of non-specific staining, which can cause problems with the accurate identification of AgNORs.

It is universally accepted method of evaluating AgNORs. Counting methods have evolved to obtain as much information as possible about demonstrable NORs. Thus we have counted discernible AgNORs, others have counted the number of NOR clusters and satellites, whilst further groups have incorporated the AgNOR distribution pattern into their assessment. As with anything, data is complex, and it is not always the case that the numbers of AgNORs in one particular cell increase with disease progression. Thus, the results of such studies do not always correlate with clinical outcome. Whether AgNORs are associated with proliferation or cell proliferation requires further clarification.

There are studies which have shown AgNORs to be associated with patient prognosis but among these, the prognostic value of AgNORs is less in the more established methods and in some cases do not provide independent prognostic information when included in multivariate analyses.

In conclusion, we stand by our previous statement that AgNORs were of great interest when they were one of the few methods of assessing cell activity in fixed, paraffin wax embedded material. As a prognostic marker, AgNORs have now been superseded by other methods, in particular the development of the KI67 associated antibodies, which are easy to use and are open to more standardised quantification.

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This text is now in its second edition, despite the fact that PCR in situ hybridisation (PCR-ISH) is still in its infancy, probably reflecting the rapid growth of the discipline in recent years.

Of course, this is not surprising, as PCR-ISH offers the high sensitivity in signal detection afforded by PCR and yet permits the investigation to localise that signal architecturally.

For the novice, the first two chapters provide useful introductions to the relevant molecular biology, then proceeding to the practical work, and the book is well structured. The greatest strength of this book is the quality of the photographs, some in colour, are used to illustrate examples of applications and results. It must be stated, however, that the quality of some of these figures is not always optimal, many being rather grey. Perhaps the most useful chapter is that describing "start-up" protocols for the beginner. This part of the book, combined with the contents of the appendices, are most helpful to those brave enough to attempt this notoriously fickle methodology.

The author's specialist interests are reflected by the inclusion of two chapters, one regarding the application of PCR-ISH to the detection of papilloma viruses, the other to the use of the method in the investigation of HIV related diseases.

Perhaps the greatest hope for the success of PCR-ISH is the use of reverse transcription methodology. This can eliminate problems of non-specificity in ISH caused by DNA repair. This is discussed clearly and practically in a further chapter.

In general, this is a well produced and organised volume and can be recommended to those about to step into this minefield of technique and reagents. It is of interest to speculate as to how many laboratories will be applying PCR-ISH by the time a third edition of this book is published!