

consider to what extent they can be explained by the activity of morphogenetic determinants in embryonic cytoplasm. The book is thus a true synthesis of cell biology and molecular biology. As such, it should prove valuable and stimulating to students of both disciplines, from the senior undergraduate to the specialized research worker.

When the first edition of the book was published nine years ago, our knowledge of eukaryotic molecular biology was rather shallow. In particular, almost nothing was known of eukaryotic messenger RNA molecules, indeed they had not been isolated, and much weight was placed on misinterpreted nucleic acid hybridization experiments. In the light of our increasing knowledge, much of the book has been completely rewritten—so much so that those who bought the first edition should also acquire the second. The classic experiments of cell biology remain, supplemented with much new information, and still form one of the threads that hold the synthesis together. Another thread is the quantitative approach to molecular aspects of development, applied on a unique scale. The use of this approach has meant reworking many previously reported data and integrating them to answer such questions as what is the rate of nucleic acid or protein synthesis at particular stages of development, how many genes are active at particular times, how do these populations of genes change, and how does the efficiency of the information transfer process change in development. In this respect the book should be seminal, for in the past there has been much loose thinking when data have been interpreted in purely qualitative terms. The reader may criticize some of the numerical arguments presented because the data used are rather inadequate. But the author makes the basis of his calculations clear and points out where potential error may exist. I believe that his assumptions are largely justified and that the approach will color our thinking for some time to come. The approach is also likely to stimulate work to improve and extend our existing knowledge.

This is not a comprehensive textbook in any sense. Important later events in cell differentiation, for example hemopoiesis and myogenesis, are not covered, nor are interactions between cells and morphogenesis. There is something to be gained from such omissions, however, for Davidson has written a coherent essay, which I read from beginning to end with enjoyment and unflagging interest. One inevitable defect is that the mechanism by which varying cytoplasmic envi-

ronments cause changes in gene activity is not considered in any depth. Unfortunately, this is wholly the fault of our general ignorance of the way in which eukaryotic genes are controlled. Let us hope that in another nine years a third edition will appear to repair this defect.

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