Book reviews

Control of Messenger RNA Stability. Joel Belasco and George Brawerman (eds). Academic Press (Harcourt Brace Jovanovich) London. 1993. Pp. 517. Price £53, hardback. ISBN 0 12 0847825.

That mRNA decay plays an important role in controlling gene expression is obvious. What has been less widely appreciated is that the decay rates of many mRNAs are differentially regulated by a variety of signals and that these changes are homeostatically and developmentally important. The stability of a given mRNA is determined by the interaction between *cis*-acting sequences and *trans*-acting factors. We know something about the former and rather less about the latter.

The editors of this book say that there has not been a comprehensive review of this field of research for specialists and this is intended to fill it. It does. The book is divided into three sections; Prokaryotes, Eukaryotes and Methods of Analysis, the latter consisting of just one chapter. The prokaryotic section has six chapters which cover RNA determinants of stability, RNases and the effects of translation on mRNA stability. The eukaryotic section has eleven chapters. Different examples of mRNA decay are discussed, including AU sequence-rich mediated decay (cytokines and protooncogenes), translationally coupled decay (tubulin), iron modulated decay (transferrin receptor) and decay of non polyadenylated mRNAs (histones). It also contains chapters describing hormonally regulated mRNA decay, mRNA turnover in yeast and in organelles, control of polyA length, mRNA stability in cell free systems, and nucleases. The chapters are written by leading workers and refer to work published up to 1992 and in a few cases 1993, as well as discussing unpublished work.

The editors also hope that non-specialists will find much to interest them in this volume. They will. The first two sections are each preceded by an overview chapter. All the chapters are self-contained and can be read individually. This means that there is some overlap between the chapters, a helpful feature for the non-specialist. The chapters are well written and illustrated, with few errors of any sort that I could detect. In particular, many of the line diagrams are so good that the reader does not really have to refer to the accompanying text.

So, I think this is a good book which plugs an important gap in the library shelves. Anyone interested in gene expression and RNA metabolism (including advanced undergraduates) will benefit by reading it. Library representatives should make sure that their Institutional library has a

copy and consider buying one for the Departmental library. What about a personal copy? At this price borrow it first.

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Mitochondrial Genomes. International Review of Cytology (Vol. 141). D. R. Wolstenholme and K. W. Jeon (eds). Academic Press (Harcourt Brace Jovanovich) London. 1992. Pp. 377. Price £47.00, hardback. ISBN 0 12 364544 1.

All molecular biologists with a taste for the strange or the downright bizarre should read this book and marvel at what a couple of thousand million years of evolution can do given a free hand. With sizes ranging from maybe 6 kb (*Plasmodium*) to an estimated 2400 kb (muskmelon), mitochondrial genomes are a wonderfully diverse collection of oddities, with immense variation in structure, behaviour and mechanisms of expression. They include the fastest (animal) and slowest (plant) evolving genomes known, a variety of different genetic codes, in some cases tRNAs and rRNAs which are so modified from standard structures that they are barely recognisable, and at least three different forms of RNA editing. This book contains some excellent reviews which should be required reading for budding mainstream molecular biologists who have a tendency to think (and be taught!) that normal mechanisms of gene expression are universal.

The first six chapters cover various groups of organisms whose mitochondrial genomes have been studied in more or less detail; ciliates (D. J. Cummings), trypanosomes (K. Stuart and J. E. Feagin), fungi (G. D. Clark-Walker), higher plants (M. R. Hanson and O. Folkerts) and animals (D. Wolstenholme, D. A. Clayton). All six reviews are written by researchers recognized to be among the leaders in their respective fields of interest, and consequently as one would expect are of generally high quality. Given the many extreme dissimilarities between the mitochondria in these different groups, readers new to the field may well be surprised to discover in the final chapter that Michael Gray comes down in favour (if only tentatively) of a monophyletic origin for all mitochondria. This marathon final chapter (124 pages!),