protein neosynthesis is not necessarily required for the triggering of apoptosis and that protein kinase C is not an universal inhibitor of apoptosis.

There is an index.

The authorship is well balanced geographically.

In conclusion, Apoptosis II gives an interesting and up to date review about the physiology and the biochemical events involved in apoptosis and its regulation. It will be very useful introductory book for beginners in the field and a necessary reference for involved researchers. The only reservation I could have is the price which, as usual with this publisher, is rather high.

Jacques E. Dumont

Protein Kinase C – Current Concepts and Future Perspectives; Edited by D.S. Lester and R.M. Epand; Ellis Horwood, Chichester, 1992. xii + 365 pp. $ 100.50. ISBN 0-13-720186-9

Since its discovery in 1977 by Y. Nishizuka and coworkers, protein kinase C has become an extensively studied enzyme believed to play a central role in cell signalling processes. Despite the vast number of scientific publications on this enzyme and the effort that has been devoted to defining its role in cell regulation our understanding of the action and the contribution of protein kinase C in living systems is only fragmentary.

With this book the editors present a timely collection of 14 outstanding and provocative reviews on this pivotal enzyme. Rather than just providing a series of reviews on different aspects of protein kinase C emphasis has been laid on proposing models for the action of PKC based on existing evidence from in vitro and in vivo studies.

The book is divided into two parts, the first one dealing with biochemical and biophysical properties of PKC and the second one addressing the biological actions of PKC.

The first part starts with a discussion of the primary structure of the PKC family members followed by two chapters on the interaction of PKC with and activation by lipids and tumor promoters in vitro. The following chapters address biophysical aspects of the association of PKC and its activators with membranes and discuss the important consequences of electrostatic interactions within membranes and of lipid presentation as vesicles or as micelles. Although these chapters deal with topics biologists and cell biologists are often not too familiar with the authors have succeeded in writing comprehensible reviews which emphasize the necessity to understand lipid protein interactions in order to evaluate the models for PKC activation in vitro and in vivo. The first part also includes a chapter on the mechanistics of the phosphotransferase reaction catalysed by PKC.

The second part of the book tackles the heroic task of reviewing a wealth of data collected in a number of different systems to elucidate PKC function in vivo. The reviews address cross-talk between signalling systems and regulation of ion channels by PKC. The history and function of the PKC substrate MARCKS is covered as well as the interaction of PKC with the cytoskeleton and the nucleus. The final chapter then tries to integrate a vast number of observations into a model how PKC may participate in the processes of normal cell growth regulation and in the process of cell transformation.

In particular, it is the combination of extensive coverage of the biochemical/biophysical aspects of PKC together with the observations in cellular systems that make this book unique in its kind. I would even go as far as to propose that reading of this book should be obligatory for everyone seriously trying to understand the role of PKC in cellular communication.

Silvia Stabel

RNA Editing: The Alteration of Protein Coding Sequences of RNA; Edited by R. Benne; Ellis Horwood, Chichester, 1993. 196 pp. $ 67.95. ISBN 0-13-782558-7

RNA editing involves the alteration of gene transcripts by addition and/or deletion of nucleotides or substitution of encoded nucleotides. Novel amino acid codons can be formed, initiation and termination codons can be introduced, and internal frameshifts can be eliminated. Thus, RNA editing can be added to the growing list of phenomena including splicing, *trans*-splicing, translational frameshifting and protein-splicing which makes it impossible to deduce, with certainty, correct amino acid sequences from their corresponding gene sequences. This novel kind of RNA processing appears to occur widely within the eukaryotic domain, and the rapid development in characterization of diverse editing mechanisms is a good reason for summarizing the developments in book form.

The book contains eight chapters written by experts who present their particular RNA editing system. It starts with an introduction providing a concise summary of RNA editing mechanisms, written by Rob Benne, who also edits the book. The next two chapters, by Stuart and Simpson et al., respectively, deal with RNA editing in trypanosome mitochondria. Editing occurs in a 3′ to 5′ direction along the mRNA, directed by gRNAs encoded by the minicircles of kinetoplast DNA, and is limited to altering the uridine composition. The former chapter provides a comprehensive review of the field while the later, which overlaps considerably on the mechanistic details, provides a more detailed description of some of the edited gene transcripts. The next chapter, by Miller et al., summarizes the diverse types of editing characterized in both mRNAs and stable RNAs of the slime mold *Physarum polycephalum*. They describe the failure to detect gRNAs in this organism and provide no insight into the editing mechanism(s). Much of the work described is unpublished (judging by the reference list) and is, therefore, difficult to evaluate, especially the data on the stable RNAs.

Kolakofsky et al. provide an entertaining account of the discovery of transcriptional frameshifting on the P gene of paramyxoviruses, which produces more than one gene product, and complement this with a thoughtful discussion of the pauses, stuttering and slippery sequences that contribute to this process.

Editing of the apolipoprotein B mRNA in mammals generates a translational stop codon UAA, resulting from a C to U change in some mRNA molecules which, in turn, produces protein products of different functions. Hodges and Scott review the extensive characterization of the RNA target-site sequence using the Morgan (reverse transcriptase) assay, and its recognition by a proteinaceous cytidine deaminase. They also speculate on the possible coupling of the editing and RNA polyadenylation processes. This detailed chapter was rendered unnecessarily long, in the reviewers' copy, by the duplication of 16 pages.

The broad subject, RNA editing in plant mitochondria and chloroplasts, is covered by Grienenberger, who provides a detailed review of the known examples of editing, primarily in the mRNAs of these organelles. Finally, Kim and Nishikura describe the double-stranded RNA adenosine deaminase which converts adenosines to