Biosynthèse des Proteines. Traduction Génétique

By F. Chapeville and A-L. Haenni. Pp 340. Hermann, Paris. 1974. 56 Francs.

Drs. Francois Chapeville and Anne-Lise Haenni are to be congratulated for producing this neat and accurate account in French of the subject of protein synthesis. Numerous monumental monographs, serial publications and reviews have appeared in the last decade dealing with the biosynthesis of proteins which one intends to read but is daunted at the last minute by their size, dullness and complexity. This book is just the answer for many who have been so deterred as well as for those just recently interested in biochemistry — at least in the French speaking world.

As mentioned in the foreward, the book owes its origin to a dozen lectures given at the University of Paris. It is divided into thirteen chapters dealing separately with such topics as transfer RNA, messenger RNA, ribosomes and the processes of polypeptide chain initiation, elongation and termination. There are also interesting accounts of the genetic code with speculations on its evolution, inhibitors of protein synthesis, chemical and ribosome-less synthesis of peptides, and a valuable index. Each chapter ends with a short bibliography of well chosen references to books, reviews and original papers.

The authors' style of writing is lucid and concise and the presentation attractive. They should also be congratulated for the manner in which each chapter is sub-divided into small easily readable sections reminiscent of Watson's style in 'Molecular Biology of the Gene'. The latter will remain a classic for a long time to come, but for which Chapeville and Haenni's book should make valuable supplementary reading, especially if it were to be translated into English. There are two particular features of 'Biosynthèse des Proteines' which merit mention and praise. Firstly, throughout the book the authors have attempted to explain well accepted conclusions by describing the original experiments on which these are based. Secondly, the diagrams, figures and chemical formulae are well prepared or judiciously reproduced and make the text even more interesting.

On a more subjective note, the book's major shortcoming is in the relative coverages of the different topics. For example, nearly a quarter of the space is devoted to tRNA and amino-acyl tRNA synthetases. There are two chapters on ribosome-free and chemical synthesis of peptides which are hard to justify in a book whose title includes 'genetic translation'.

A major criticism that could be made is that the book principally covers protein synthesis in prokaryotes and will thus leave many interested in eukaryotic systems unhappy. In some chapters rather superficial accounts of eukaryotic protein synthesis have been added at the end, almost as an afterthought. It would have been useful to have a description of the early work of Zamecnik's group on rat liver cell-free protein synthesizing systems which preceded the work on bacterial ribosomal systems. Also, there is inadequate coverage of those aspects of protein biosynthesis where eukaryotes differ from bacteria — the generation of different types of RNA's by separate RNA polymerases, the intranuclear processing of heterogeneous nuclear RNA, the presence of polyadenylic acid in animal messenger RNA, are just a few examples. Perhaps a consideration of the whole subject from a cell biological viewpoint would have emphasized the importance in eukaryotic protein synthesis of such features as the topological segregation of transcription and translation, or the synthesis of secretory and non-secretory proteins on membrane-bound and free ribosomes. The same criticism holds for the chapter on translational control where there is little or no reference to the ideas of Tomkins and Schimke on rapid turnover of proteins synthesized on stable messengers in eukaryotic cells or to the extensive literature on hormonal regulation of protein synthesis.

However, the numerous attractive aspects of Chapeville and Haenni's 'Biosynthèse des Proteines', mentioned earlier, more than compensate for these drawbacks. The publishers should also be congratulated in this venture on 'Collection Méthodes', to which this book belongs. It will be particularly valuable to French speaking undergraduates, research students and those biochemists who intend to learn more about the state of prokaryotic protein synthesis as it was in October 1972. The only deterrent to many who wish to own this book will be its rather steep price of 56 francs for a paperback.

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Mechanisms of Cell-Mediated Immunity

Edited by R. T. McCluskey and S. Cohen. John Wiley and Sons. 1974. Pp 418. £12.00.

This is a multiple-author book with the attendant strengths of a collection of reviews by experts and the inevitable weaknesses engendered by not having the whole book written by the same author. The standard of writing varies, as do the styles. There are some attempts at cross-referencing between chapters, but there are also some gaps and some overlaps. The latter can often be helpful in a multi-author book since the reader can get two points of view on the same subject. However, the most outstanding example in this book is the overlap between Chapter 4 on Antigen Recognition and Chapter 5 on Cellular Receptors: their nature and specificity. The dual coverage of the very controversial area of receptors on T cells could be particularly valuable to the reader, though a very careful perusal of both chapters would be necessary in order to get an integrated picture of the current state of the art. Throughout the book conflicting points of view are rarely presented with any equality from both sides. This matters most in the case of more recent data and more controversial areas. There is, however, extensive referencing of original articles and recent reviews so that anyone wishing to pursue both sides of a particular argument can readily do so.

There are some good historical reviews, one of the best being Chapter 10 on Transplantation Immunity. The word 'Mechanisms' in the title of the book leads one to expect more than is probably possible, given the present state of knowledge. Phenomena are much more prevalent than mechanisms, even in Chapter 6 entitled Mechanisms of Lymphocyte Activation. This is not really a criticism of the book, but merely of the use of the word 'Mechanism'. There is an attempt to introduce methodology, particularly through the inclusion of five appendices. I have mixed feelings on this point since in one or two cases the methods appear to be directly usable while in others it would appear to be best to go back to the original literature references. This is one part of the book which is probably more useful to the teacher who wishes to prepare a class experiment rather than to a research worker embarking on any of these techniques.

The book is attractively laid out with clear type and excellent use of sub-headings. There is, however, a very limited use of illustrations, either diagrams or photographs. Illustrations are only used to any extent in Chapter 7 on Cytotoxic Reactions of Lymphocytes and Chapter 8 on Cell-Mediated Immunity and the Response to Infection.

Overall the book represents a partial success of an ambitious venture. It is sufficiently successful to be useful to some of the groups at whom it was apparently aimed. Teachers in a variety of adjacent areas should find the volume useful, as should a variety of clinical research workers. For the student it is probably a case of dipping into a library copy of the book rather than purchasing a copy for a more complete reading or constant referral. I would add that the book is happily free of trivial mistakes, but I cannot resist passing on a new word spelt 'trtsoubm', which appears in the Index under the heading Nucleic Acids.

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Glucose-6-phosphate dehydrogenase (G6PD or G6PDH) (EC 1.1.1.49) is a cytosolic enzyme that catalyzes the chemical reaction. D-glucose 6-phosphate + NADP+ + H2O â‡Œ 6-phospho-D-glucono-1,5-lactone + NADPH + H+. This enzyme participates in the pentose phosphate pathway (see image), a metabolic pathway that supplies reducing energy to cells (such as erythrocytes) by maintaining the level of the co-enzyme nicotinamide adenine dinucleotide phosphate (NADPH). The NADPH in turn maintains the level of The mRNA can be converted to the DNA segment named cDNA by use of reverse transcriptase. cDNA (complimentary DNA) is a double-stranded DNA copy of the mRNA and serves as a template for protein biosynth-esis. The blunt ends can be converted into sticky ends by a ligase and inserted to the plasmid by the restriction enzymes.Â Cl N 6-chloro-nicotinic acid. Cl COOH. Cl N 5,6-dichloro-nicotinic acid. Cl Cl. Cl N 2,3,5-trichloro-pyridine. CH2OH. COO-. Cl N (6-chloro-pyridin-3-yl)-methanol. HO. N. amphibolic path needed for biosynth and catabolism - NADPH - metabolites E4P and ribose-5-P - intermediates generate ATP. believed to be in ALL organisms. yield: 3 G6P -> 2 F6P + 1 glyceraldehyde-3P + 3CO2. PPP intermediates can be: - degraded to pyruvate via EMP enzymes - regenerate G6P by gluconeogenesis. Tricarboxylic Acid (TCA)/Citric Acid/Kreb's Cycle. - aerobic bacteria, free-living protozoa, most algae, fungi --enzymes in cytoplasm for prok --in mitochondrial matrix of euk.