

The Regulation of Membrane Lipid Metabolism

by G. A. Thompson, jr

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This book represents a noteworthy attempt to summarize and synthesize our current knowledge of the mechanism of lipid metabolism and the regulatory forces which control the deposition, exchange and organization of lipids within membranes. By now the factual evidence we have concerning the enzymes and metabolic pathways of lipid biosynthesis and catabolism is more or less complete, although undoubtedly a few further enzymes and metabolic byways remain to be discovered. Consequently this knowledge is perhaps straight forward to present and the author has done so with commendable excellence combining brevity with readability. This is achieved by presenting an outline of the metabolic scheme in conjunction with really excellent diagrams of the pathways involved, some with artistic panache. The schemes for the biosynthesis of fatty acids in plants and animals and the necessity of the former for essential fatty acid formation are charmingly encompassed in the outline of a rabbit eating a cabbage. The presentation of scientific information can be unbelievably dull, yet one can imagine that the puritanical editors of many of our staid biochemical journals would consider such lightening as being so much misplaced frivolity.

Of necessity, the treatment of the regulation of lipid metabolism and its role in controlling the physiological functioning of membrane has, at times, to be more blurred and indefinite. As in most areas of biochemistry, our factual knowledge of lipid metabolism has far outstripped our physiological understanding of the operation of such processes. The author has here lent heavily on recent reviews in each area of lipid metabolism, but in doing so has picked out the salient points and has avoided the individual bias of some reviewers with a personal involvement in a given field. The current knowledge is presented clearly and the possible implications for regulatory control are discussed with both authority and common sense. Sometimes a crabbed critic might disagree with the interpretation presented or the reported

historical development of a field but the individual chapters are very well referenced and stimulate further reading if one is so inclined. Clearly the author would have liked an easier task in explaining and packaging experimental findings; but nature and evolution are never like that, metabolic pathways are complex and diverse and the message seems to be that if it works and the organism survives, the complicated is as good as the simple design. He has certainly not fallen into the mistake of being overconfident or simplistic in his conclusions and after presenting the available evidence he is not afraid to say that, as yet, we just do not know; for example, in the final chapter on the influence of protein synthesis on lipid metabolism the author admits

'The ten previous chapters have come and gone, and no satisfactory answer has been offered to explain precisely how membrane lipid specificity is regulated.'

This is refreshing in a scientific world which often searches too frantically and prematurely for a biological meaning to much biochemical information and is often prepared to speculate and pontificate on the most flimsy experimental evidence. Probably such tendencies are caused by the mould cast by many grant awarding bodies and the organizers of scientific conferences.

The author wistfully quotes in his introduction from Lewis Carroll's *Alice in Wonderland*:

"'If there's no meaning in it" said the King "that saves a world of trouble, you know, as we needn't try to find any".'

Quite rightly, however, he states there is without question some important meaning behind sometimes inscrutable experimental findings, and that we must continue to strive to understand. As Browning puts it:

'man's reach should exceed his grasp, or what's a heaven for?'

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