

## Book Reviews

**Proteins: Structures and Molecular Properties** (Second Edition): by T.E. Creighton, Freeman; New York, 1992; x + 507 pages; £22.95. ISBN 0-7167-7030-X.

The volume under review is clearly a labour of love. The author has taken time off from his active research career to write a treatise on all aspects of physical and chemical properties of proteins as well as their evolution and synthesis. With such a wide remit at the level at which this text is written, both the author and a reviewer has the problem that the expertise of a single individual is bound to be patchy.

A very valuable contribution of the book is its extensive list of references, both to recent literature and a decent respect for classical papers. Many reader will also be grateful to the author for the many tables of data on properties in solutions and on structural interactions. In this connection one should emphasize the author's nice balance in his discussions of the contributions of solution physical chemistry and three dimensional structure to our knowledge of protein functions. Tom Creighton's own interest in protein folding is clearly evident, both in the treatment of the subject itself and in the discussion of methods required for its study. The general emphasis on methods for the study of proteins is altogether a good feature of the book.

The fact that I found some aspects less satisfactory, in this very well written and produced volume, can be attributed to personal taste. Certain subjects are treated superficially and repetitively in a number of places, while the total space allocated in a single section with cross-referencing, could give a clearer presentation. Such topics are, for instance, water structure and kinetics (especially of cooperativity). Kinetics in general is treated at a level below that of a College Chemistry text. Those aspects of the section on enzyme catalysis which are valuable should have been placed in the section on protein structures. The rest of the enzymology is below that of a good biochemistry text and adds little credit to a fine book.

It would be nice if all students of biochemistry and molecular biology studied this book and thus obtained a good feeling for factors which contribute to protein function. I also feel that I am in the rare position of congratulating the publishers on the reasonable price. I hope this will help to spread the gospel about basic principles among now-a-days merely fact-hungry students.

H. Gutfreund

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**Protein Folding**; edited by T.E. Creighton, Freeman; New York, 1992; xix + 547 pages. £47.95 (hardback). ISBN 0-7167-7027-X.

I confess to a sinking feeling when presented with books in this format – a collection of chapters written by different authors parading as a comprehensive text book. They are, more often than not, an excuse to re-publish a series of only vaguely connected, if worthy, research papers. This prejudice was quickly dispelled on reading this work; it is a readable text book in the form of an anthology and a very good one.

The topic of protein folding is, at first sight, an odd choice for such an undertaking in that it remains an unsolved problem in science. This precludes the orthodox text-book treatment of 'how it works' and 'how we found it out'. Folding is at once an intriguing and an exasperating subject for the following reasons. First, it is easy to determine the amino acid sequence of a protein molecule. Second, physical chemists assure us that they understand the nature of interactions between these component units. Third, for a hundred-odd proteins and a vast number of homologues, crystallographers have determined the precise way a given sequence does fold. It therefore seems ludicrous that these

elements cannot be combined to produce a set of robust and general rules which relate protein sequence to three dimensional structure. After all, the consequences of solving this last step in the interpretation of genetic information are not trivial.

With this in mind, this book is a timely attempt to define the complexity of this problem and to summarize current experimental knowledge and theoretical approaches. In addition, it appears a general aim of the editor and his contributors to illuminate the way ahead.

There are ten chapters in the anthology beginning with an introduction by F.M. Richards which eruditely presents the history and the outline of the subject. This is followed by J.M. Thornton's description of structural patterns in folded proteins, a chapter by P.L. Privalov on the thermodynamics of the process from an analytical viewpoint and a joint contribution by M. Karplus and E. Shakhnovich on the theoretical frameworks and physical models which have been applied to folding.

The direction of the book then takes an experimental turn with

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