Book Reviews


This book is intended for the comparative beginner in protein physico-chemistry. It contains sixteen stand-alone chapters which differ widely in breadth, depth and length, and which are presented in apparently random order with no continuity and very little cross-referencing. This blemish gives a rather disjointed result, and raises a problem: a non-expert who uses this book as an introduction will gain only little perspective from it, while someone who already has the necessary perspective to use the book will probably be familiar with many of the subjects with which it deals.

The choice of chapter topics does justice to the subtitle 'Theory and Practice'. The more theoretical chapters cover non-covalent forces important in proteins' conformational stability, disulphide bonds, the 'molten globule' model, kinetics of folding, and stabilisation by solvents. While the emphasis of these chapters is on theory, the theory is generally well illustrated by experimental results, and the reader wishing for more detail will find adequate reference to reviews and original articles. The reviewer felt the chapters on non-covalent forces and disulphide bonds to be the most satisfactory; that on solvent stabilisation is also excellent but the topic is of less general interest. The chapter on the kinetics of protein folding suffered from the weakness that this subject is very broad and not so well understood; the account of the molten globule is wordy and lacks the conciseness of the other chapters.

Five spectroscopic techniques are covered: ultra-violet absorption, fluorescence, infrared, circular dichroism and nuclear magnetic resonance applied to hydrogen-deuterium exchange. The UV chapter provides a balanced introduction and description, including practical advice. The fluorescence and IR chapters require prior understanding of these methods; they summarise what can be done without very much explanation of how, while the CD chapter is rather autobiographical.

The H/D-NMR chapter also requires prior knowledge of NMR; its application is well explained and some typical practical protocols are included.

Further chapters include accounts of degradative reactions (this cautionary chapter should be read by everyone learning to work at the bench with proteins), of locating post-translational modifications by peptide mapping (a practical chapter that includes many protocols), denaturation by urea and guanidine hydrochloride (with detailed practical instructions). On the down side, the contribution on site-directed folding mutants of subtilisin is really just a review of the contributor's own work, while the chapter on chaperone assisted folding turns out to be no more than a laboratory-class manual for 3rd-year undergraduates, that is, ones who have supplies of GroEL and GroES on hand. Finally, a chapter on differential scanning calorimetry merits special commendation as a condensed and thorough but still highly readable introduction to this technique as applied to protein denaturation (but check your basic thermodynamics before tackling it).

In spite of its unevenness, this book contains enough good material to be a recommended purchase for libraries frequented by undergraduate and post-graduate students of biochemistry.

Two questions might be put to the publisher of Protein Stability and Folding. (1) This book is not a laboratory manual and therefore does not need to lie flat on the bench. So why put it in a plastic ring-binding, making the pages irritatingly hard to turn? (2) The jacket notes claim that 'this book will ensure a significant difference in the outcome of your experiments, producing the result desired even for beginners'. Has academic advertising really sunk so far?

Paul Woolley