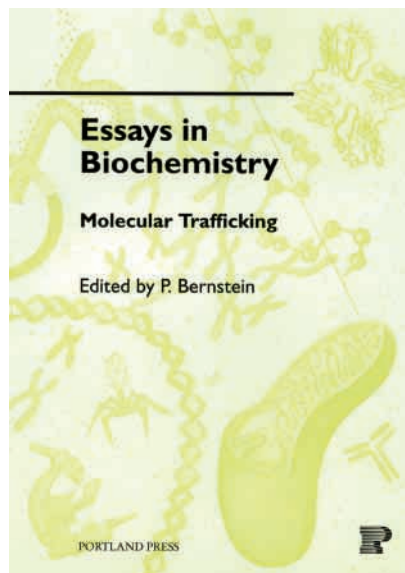


Molecular trafficking: are some organelles more important than others?



Essays in Biochemistry, Vol. 36: Molecular Trafficking

edited by Philip Bernstein

Portland Press (2000) 145 pages.
ISBN 1 85578 131 X
£19

I recently gave a tutorial on protein translocation across membranes to a handful of carefully selected graduate students at a prestigious institution with a lot of groups working on protein trafficking. None of the students knew who Günter Blobel is, nor had they ever heard of the signal hypothesis.

Sadly, this edition of *Essays in Biochemistry on Molecular Trafficking* is not going to improve matters: neither Blobel nor his seminal hypothesis are mentioned in the chapter on protein translocation into the endoplasmic reticulum (ER). Signal recognition particle is discussed in great detail, but its function – the coupling of translation and translocation – remains unexplained. There is also no discussion of co- versus post-translational translocation and no mention of the great amount of work that has been done on this subject in *S. cerevisiae*. While on the whole the first

chapter is still informative and useful, it would have been substantially better had the editor caught these omissions. Likewise, the second chapter – ER chaperones – might have benefited from vigorous editing to moderate its eccentric pitch: it deals mainly with obscure functions of chaperones in peptide loading of the MHC class I complex and tumour-antigen presentation. In combination with the confusing figures, I doubt that any student or non-specialist will be able to distil the main function of chaperones in the ER – i.e. aiding protein folding – from this review.

After that, it gets a lot better: the chapters on vesicular transport and chloroplast and mitochondrial import are what they ought to be – well written, informative, timely and comprehensible. The use of figures to clarify complex biological processes, however, is an art that is difficult to master; here, Danny Schnell succeeds for chloroplast import, whereas Gordon and colleagues could have used some help from a professional illustrator to improve their depictions of the admittedly complicated stages of mitochondrial import.

I was surprised by the complete omission of peroxisomal import in this collection of reviews, especially given the recent advances in this field. I understand that it can be difficult to persuade scientists to sacrifice time to write book chapters, but surely, in a field of significant size, somebody could have been found to fill this gap. Equally surprising was the extensive treatment of transport into and out of the nucleus. Having said that, I think that three of the four chapters covering this subject are extremely worthwhile. Rout and Aitchison's review of nuclear pore structure is outstanding in its clarity, especially given the enormous complexity of the subject and the fact that we are only beginning to understand nuclear pore structure/function relationships. Likewise, Barry and Wentz admirably summarize the wealth of information on nuclear import and export, and the tables and figures in this chapter are particularly helpful. Schwoebel and Moore's treatise on modulation of nuclear localization as a method to regulate gene expression is as

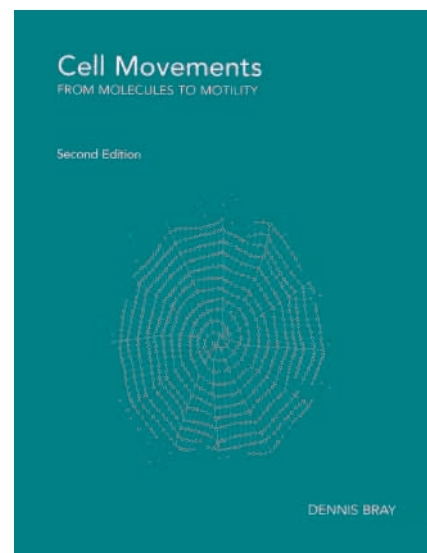
elegant as the processes they describe. In contrast, the chapter on viral RNA export, while well written, seems rather too specialized for a book that is aimed primarily at students.

Altogether, this book is a useful teaching aid for most aspects of protein trafficking, and I would certainly recommend it to my students – but not without pointing out that the root of all this work was the signal hypothesis.

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Crawling cells and elastic stockings



Cell Movements: from Molecules to Motility (2nd Edition)

by Dennis Bray

Garland Publishing (2001) 372 pages. ISBN 0-8153-3282-3
£29.95

'All mankind is divided into three classes: those that are immovable, those that are movable, and those that move'.

If only Benjamin Franklin had laid his hands on a copy of *Cell Movements* by Dennis Bray, he might have been tempted to change 'mankind' to 'life'