



Book review

***Plant biochemistry and molecular biology* (2nd ed.);
P.J. Lea and R.C. Leegood (Eds.); John Wiley &
Sons, New York, 1990, £60**

The second edition of this obviously-popular book (six reprintings since 1993) has come at an interesting time, one when the exciting implications of plant molecular biology have suddenly become of popular currency. Indeed, the closing chapter focuses on transformation and gene technology, though the hairy topic of 'public acceptance', gets less than a sentence of mention!

Nevertheless, this textbook represents a transitory stage in such volumes, one where the traditional biochemistry of metabolism etc. is becoming less taught and new knowledge from molecular biology is increasingly important. As a generalisation, I thought that 'Plant Biochemistry and Molecular Biology' struck a good balance although there were certainly places where there seemed to be too much or too little information about a particular topic.

A problem with multi-authored books is, obviously, that literary styles can be quite different. Moreover, the editors have to be careful (or is it the publishers?) to ensure that layout, use of references etc. is consistent. I found one or two exceptions (mistakes?) in the general house-style. Further reading is always an important part of a textbook and this was given to a very varying degree by the different authors. In fact, the use of 'references' was very extensive in some chapters and almost non-existent in others. 'Further reading' is, perhaps, a more useful section for students and, again, here the treatment was uneven.

There are three real problems to be faced by the authors/editors of a book like 'Plant Biochemistry and Molecular Biology'. The first is that it is expensive compared to standard textbooks. Thus, sales are limited and these facts lead to the two other (associated) problems. The need to save on production costs means that colour is seldom used. Therefore, 'Plant Biochemistry and Molecular Biology' suffers by comparison with the superb illustrations in the likes of

Stryer, Alberts et al., etc. Also, there is the thorny question of what to include and what to assume that readers have gleaned from other basic textbooks.

Dealing with the latter problem first I thought that a good balance had been struck, on the whole. There were some omissions, which I thought a pity. No mention was made of the mechanisms of ATP synthase, which has just merited a Nobel Prize despite the same chapter having considerable detail about other photosynthesis complexes. Enzymology was not covered although all the metabolism and much of the molecular biology depends on enzymes. I was not, however, surprised at the omission of flux control theory even though flux control was mentioned. This is a (surprising) constant deficiency of textbooks! Although membrane structure was briefly covered, transport was not except just to name particular systems. However, these are small criticisms compared to most of the book, which has got it just about right. To save space for future additions perhaps extensive lists of genes or genome maps could be omitted. After all, in my experience, they will appear nothing but daunting to a second year undergraduate student!

The lack of colour shows. Many metabolic sequences appear dull compared to their equivalents in other books. And nowhere was colour missed more than in Fig. 12.15, which I know, makes a really spectacular slide. Some photographs were included and they were usually of high quality. In fact, more would have been welcome. For example, Fig. 1.10 lacked an impact that, perhaps, a plate would have given.

I'm sure students will welcome attempts to make some complex aspects of metabolism more simple e.g. overviews of secondary metabolism, terpenoid formation. However, in other cases (e.g. tetrapyrrole synthesis) it might have been better to include simplified structures so that the student appreciated what was going on. I would like to see more 'simplified pathways' in the future in order to help students. For example, the Calvin cycle always proves a hurdle once one gets past the glyceraldehyde 3-phosphate stage. On the other hand the same author summarised differences in carbon metabolism in an exemplary table (Table 3.5) that I, for one, will draw on in my own lectures. Occasionally, authors got overcome with their own

E-mail address: harwood@cardiff.ac.uk (J.L. Harwood)

enthusiasm and gave detail which I doubt is wanted in a book at this level nor would be fully appreciated by students!

Apart from general omissions referred to above which were presumed (presumably!) to be covered by general textbooks, there were some ‘plant’ subjects that might have been included. Thus, the plant’s contribution to elemental cycles and a section on growth regulators/hormones were missing although aspects of these were found scattered here and there. In fact, given its importance for so many developmental aspects, there was rather little coverage of phytochrome to take one particular example.

The index seemed functional but very few chapters had any sort of summary, which, again, would have been appreciated by students.

In conclusion, I hope my mild criticisms written above do not give the impression that I didn’t like this book. I did and consider that, in general, it is clear and functional. Most of the faults, such that they are, stem from its difficult position in the market place.

One imagines also the various authors working hard for little reward to bring out the second edition. They deserve full credit and a pat on the back – there were very few errors that I spotted. (Perhaps Table 9.2 could be sold to Master Mind or Trivial Pursuits in order to increase royalty payments!)

I recommend this textbook as providing information on Plant Biochemistry and Molecular Biology at a satisfactory level for initial acquaintance with the subject. It is clearly worded and covers the breadth of the subject well. If only it were cheaper so that I could make it ‘recommended’ rather than ‘additional reading’ for student courses I teach on.

J.L. Harwood

*School of Biosciences,
Cardiff University,
P.O. Box 911,
Cardiff CF1 3US, UK*