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Book reviews

Heme, Chlorophyll, and Bilins. Methods and Protocols
A.G. Smith and M. Witty; Humana Press, Totowa NJ, 2002, ix + 340 pp., $125, ISBN 0-896-29111-1

The shape of the tetrapyrrole macrocycle is one of the icons of biological chemistry. A vivid memory from my early biochemical education is of coming across a simple trick in Conn and Stumpf's introductory textbook for quickly drawing this complex structure. There seems to be something intrinsic to the nature of these essential constituents of living organisms that encourages practicality in the interested scientist. *Heme, Chlorophyll and Bilins* is nothing if not practical: a handbook comprising 14 chapters of protocols from laboratories in the US, UK, Germany and Greece. The literature cited in this book (publication date 2002) runs up to 1999, with one or two 2000 references included, telling the usual tale about the time it takes to organise, deadline, edit and print a multi-author volume. Nevertheless, tetrapyrrole biochemistry is a pretty mature subject, with a solid foundation of knowledge and methodology that has stood the test of time, so I would expect this book to have a healthy half-life.

There is no reason why a book of this sort should make for light bedtime reading, and several of the chapters stick to the job of giving step by step instructions for particular procedures and nothing much else. But some of the contributions include enjoyable touches. The editors' introductory chapter, which summarizes the structures, distribution, biosynthesis, exploitation and functions of tetrapyrroles, is an admirably concise appetizer for what follows. I particularly liked Kevin Smith's survey of the chemical syntheses of chlorins and porphyrins, in which he comments that the procedures described may look complex but are fairly simple for most competent organic chemists, who would, however, "...not know where to start if they needed to run a gel or...do a northern blot".

Tetrapyrroles are rarely found free in living cells and so it is appropriate that half the chapters deal with complexes of haem, chlorophyll and bilins with proteins. These accounts extend the range of methods from basic chromatography, spectrophotometry and fluorimetry into areas such as two-phase systems and crystallography. There seems to have been a deliberate editorial policy to hold back from moving too far into molecular biological techniques (expression of recombinant proteins and so forth): I think this was a good decision which preserves the focus and practical value of the book.

Within its terms of reference, the book is fairly comprehensive, but a disappointing omission concerns the products of chlorophyll catabolism. The only reference to this highly visible biological process is erroneous (senescing plants do not normally accumulate significant amounts of phaeo-pigments) and an opportunity has been missed to describe some interesting bilane-type structures (e.g. Kräutler et al., 1991; Iturraspe et al., 1995; Curty and Engel, 1996; Mühlecher et al., 2000) as well as a catabolic sequence that seems to have evolved from the fusion of an ancestral excretory pathway with a detoxification mechanism (Hörtensteiner et al., 2000). Another source of some dissatisfaction is the Index which, for a volume that will be used as a practical reference, is rather perfunctory; it also seems to use a strange alphabet that runs "...F G H I I M N...". These complaints aside, however, the book is a useful source for the tetrapyrrole researcher and I expect it to be well thumbed when colleagues in the lab learn that it's on my shelf.

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Fungal Pathogenesis: Principles and Clinical Applications R. Calderone and R.L. Cihlar; Marcel Dekker, New York, Basel, 2002, 762 pp., $195, ISBN 0-8247-0568-8

Fungal pathogenesis is a collection of (32) chapters on various aspects of biology, pathology, prophylaxis and diagnosis of human diseases caused by fungi. The emphasis, as would be expected by a collection in the "Mycology Series" published by Marcel Dekker Inc, is on fungi. The first point I noted was the attempt at near-universal coverage of the subject matter and the result is a comprehensive, encyclopaedic, treatise with contributions from some of the best known laboratories world-wide. The sheer volume of cited works run into thousands and is reasonably up-to-date. The information in the individual chapters varies somewhat in depth, but in most cases can cater for an advanced readership. The multi-authored approach guarantees that each chapter can be read individually and makes this rather massive tome quite accessible, even to an outsider. One feature that struck me as particularly positive is the combination, in one place, of the fundamental biology of fungal pathogens with more applied and clinical aspects.

The usual gripe about multi-authored texts applies here too: there is a heterogeneity in style and depth, although we have probably become accustomed to this and do not mind it too much. Although I am sure specialists will find individual bones to pick with the authors of the chapters, one fault that is very striking and consistently bad is the very poor quality of the illustrations. In part this is a responsibility of the authors (some figures are redundant and a waste of space); but most of the blame probably lies with the publishers: too many of the images, which might have been interesting and illustrative, are rendered completely useless by the abysmal quality of the reproductions. This is particularly the case with micrographs and figures of biological samples. In addition to this, two general areas are not really covered adequately: fungal genomics and diseases caused by fungi on organisms other than humans. As far as genomics is concerned, there are a number of filamentous fungi whose genomes have been or are being sequenced and this includes some pathogens too (and comparative genomics is likely to be a particularly fruitful avenue of research). The absence of any section devoted to non-human animal (e.g. insect) and plant pathogens is a serious lacuna: an awareness of the concepts elaborated and data uncovered in different but related fields is likely to reveal some interesting, and perhaps helpful, parallels.

In essence: a useful reference volume for fungal biologists and human pathologists with an interest in diseases caused by fungi.

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