Book review

Cytochrome P450 Protocols, 2nd edn

Editors I. R. Phillips & E. A. Shephard. Published by Humana Press, Totowa, NJ, 2005. 384 pages, price £135. ISBN 1-58829-441-2

The pace of research on the cytochrome P450 superfamily of drug-metabolizing enzymes shows no signs of abating. This has been partly fuelled by renewed interest in the areas of pharmacogenetics and drug–drug interactions in relation to drug response. Much effort is being invested into the development and application of *in vitro* techniques to predict drug pharmacokinetics *in vivo*. In particular, cytochrome P450 *in vitro* inhibition data are a valuable aid in the design of clinical drug–drug interaction studies.

The techniques used to study cytochrome P450 are varied, complex and subject to pitfalls. Detailed information on these methodologies tends to be scattered throughout the literature in very much a nonstandardized fashion. In this book, Ian Phillips and Elizabeth Shephard have brought much of this information ‘under one roof’ based on contributions from many individuals who have been involved in the development of these techniques.

The two most impressive features of the book are (i) the step-by-step approach in the description of each method, which is generally straightforward and easy to understand, and (ii) the detailed notes at the end of each recipe. The latter give many extremely useful tips for optimizing experimental conditions, e.g. stating if a compound is light sensitive, or suggesting that fresh solutions of a compound should be prepared for each experiment, and for how results should be interpreted. In addition to the experimental detail, most chapters contain good, in-depth accounts of the background to each topic.

There are 37 chapters, the book starting with a discussion of cytochrome P450 nomenclature. Although there is very thorough coverage of how individual enzymes are named, data are presented only up to September 2004 (out-of-date information is the bane of text books, particularly those that are multiauthored), at which time 3811 different forms had been identified. Looking at the

author’s website (<http://drnelson.utmem.edu/P450.stats.2006.htm>, accessed 1 September 2006), there has been a substantial increase to 6051 in the last 2 years. Fortunately for those of us studying them, only a small number of cytochromes P450 are involved in human drug metabolism. A further chapter on the Nomenclature Committee website appears rather oddly out of sequence in the middle of the book. This chapter focuses on human cytochromes P450, and rightly urges the interested reader to visit regularly the *CYP* allele website (<http://www.imm.ki.se/CYPalleles>) for updates.

The topics covered include purification and detection techniques, use of liver microsomes and hepatocytes, enzyme assays, expression in heterologous systems, techniques for studying regulation and genetic polymorphisms of enzymes, and finally knockout mouse technology. The methods presented are mainly up to date, although it is surprising to see descriptions of probe substrate assays using the rather outdated techniques of spectrophotometry (for p-nitrophenol hydroxylase) and thin-layer chromatography (testosterone 6 β -hydroxylase).

My laboratory-based colleagues all praised this book, and I thank them for their input into this review. Although not cheap, I believe that it will be useful to everybody, from novices to experts, engaged in cytochrome P450 research.

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