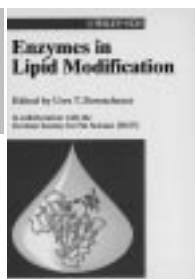


# Chewing the Fat

## Enzymes in Lipid Modification

Edited by Uwe T. Bornscheuer

Wiley-VCH, Weinheim, 2000. XX + 424 pp., hardcover, DM 248.00.—ISBN 3-527-30176-3



This book is a compilation of reviews written by competent experts in the field of applied lipid biotechnology. It certainly provides a concise coverage of the last decades' development in the elucidation of the function and applicability of lipid-modifying enzymes in a series of succinct yet comprehensive chapters, which not only serve as a general introduction to the topic, but also combine up-to-date information from diverse sources to form a very useful compendium. Particular emphasis was placed on the biotechnological application of enzymes acting on lipids, thereby focusing mainly on lipases, phospholipases, and lipoxygenases, but also some other modifying enzymes (glycosidases, proteases, monooxygenases) have been included.

The chronological organisation of the book is following the historical development of biotechnical lipid modification, and contributions reporting significant advances in the field are found in each section. The book is covering all the major aspects of enzyme characteristics, reaction mechanisms (both enzymatical and chemical), substrate and product properties as well as detailed descriptions of various biotechnological processes (e.g. synthesis of monoglycerides, production of functional lipids, function of different bioreactors, immobilisation of enzymes, lipoxygenation). In each chapter one review is concentrating exclusively on the state-of-the-art information available about the respective enzyme, which renders the book a successful combination of basic enzyme biochemistry and applied biotechnology with priority assigned to the latter.

Indicative of the importance of especially lipases as a major biocatalyst employed in lipid modifications, half of the contributions of this book are enclosed in the chapter on lipases. Meeting the increasing industrial interest in these enzymes, special applications are discussed (e.g. production of acylglycerols, fractionation of fatty acids, synthesis of regioisomerically pure glycerides, generation of peroxy fatty acids, production of lipids containing polyunsaturated fatty acids (PUFAs), modification of oils by interesterification, including detailed information on molecular analysis, determination of protein structure, and biochemical features. A successful approach of genetic engineering of a lipase leading to optimised substrate specificity is also described. This experiment is opening new perspectives for the future generation of customised catalysts optimised for the production of any desired lipid.

In conclusion, this book provides a useful initial reference source for scientists interested in and working on lipid engineering. The information given in the text is additionally illustrated with a large number of clear figures and summarising tables, which facilitate its rapid comprehension. Furthermore, numerous references at the end of each review enable the fast access to subject-specific literature.

However, it is unfortunate that the high cost of this book is likely to preclude acquisition of personal copies and to limit its availability to library collections in both public and private institutes, for which it can be definitely recommended.

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## Intracellular Ribozyme Applications

Edited by John Rossi and Larry A. Couture

Horizon Scientific Press, Wymondham (UK), 1999. 294 pp., hardcover, \$ 149.99.—ISBN 1-898486-17-4

Almost 20 years after the discovery of catalytically active ribonucleic acids, the initial enthusiasm regarding their potential therapeutic exploitation has changed into a more cautious view on their role as a drug for clinical use. While the use of ribozymes as a tool to study gene function in cultured cells and in vivo seems to become an established methodology in the laboratory, there is increasing demand to summarize and to define the status of ribozyme-based therapeutics in order to realistically assess their usefulness in molecular medicine.

The delivery of biologically active ribozymes by endogenous expression of recombinant ribozyme-coding genes transferred into target tissues of interest represents a major form of their application and is in the focus of current interest in molecular biology, developmental biology, and molecular medicine. Due to the complexity of this strategy, however, a number of critical biological and technical issues have to be considered. It is a major subject of ongoing discussion whether the hurdles in the development of endogenously expressed ribozymes are technical or biological in nature. The answer to this question has a strong impact on the probability of overcoming the current problems.

This book provides comprehensive, solid, and carefully weighted information on the design of ribozymes, on strategies for their intracellular expression and their delivery, and examples of the monitoring of their activity as well as examples of their application. It is of particular importance for those who intend to make a decision about their own activities toward the use of catalytic RNA and DNA. This book provides, thus, the right information at the right time: The relevant concepts in

the field are described as are detailed and instructive protocols to establish the current-state technologies.

At a time at which many colleagues consider to enter or to leave the field of nucleic acid therapeutics in general and of ribozymes and catalytic DNA in particular, I regard this instructive and clearly written book as a very helpful platform for making their decision.

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## Recombinant Antibodies

by Frank Breitling and Stefan Dübel

Wiley-Liss, New York, 1999. ix + 161 pp., softcover, \$ 67.50.—ISBN 0-471-17847-0

Finally! Someone dared to tackle the topic of "recombinant antibodies" and wrote an extremely convenient book on this rapidly evolving part of protein engineering. The authors, Frank Breitling and Stefan Dübel, succeeded in touching many of the important aspects related to both theoretical background and practical applications of modern molecular biology to antibodies. In my point of view, they precisely fulfilled their goal claimed in the preface: "This book is aimed at interested students, technical assistants and scientists that have come into contact with this field for the first time." Nothing more, and nothing less. Some professionals in the field may quote it as a deficiency that throughout the book all topics are described starting with the very basics in a language that is easy to understand. The authors omit (in this context) superfluous theoretical and practical details, which would make many of the intended readers stop reading after the first couple of

pages. Seen in the light of the intention cited above, I regard all this as the "big plus" of this book which guides the reader through the rather specialized topic of recombinant antibodies.

It starts off with a brief accumulation of background knowledge on natural antibodies' purpose, structure, and genesis. Here, also the *raison d'être* of recombinant antibody technology is introduced. It may be added that especially in Chapter 1 the printing quality of certain figures is rather low and sometimes the choice of the gray tones used was not optimal. However, it has to be stressed, on the other hand, that the vast majority of the figures is superb in clarity, simplicity, and quality. The second chapter deals with all kinds of ways and means of how recombinant antibody fragments are generated in the laboratory nowadays. The descriptions range from antibody gene libraries, hybridoma technology, and selection systems like phage display to antibody engineering. Of course, topics like humanizing antibodies, chain shuffling, or affinity maturation are covered extensively, but camel antibodies or catalytic antibodies are discussed as well. Due to the fast-proceeding research in this area, relatively recent developments like fusions to gene VIII of the M13 bacteriophage family, phage  $\lambda$  display, or ribosome display were not included. The general fact that developments are covered only until 1997 may be regarded as one of the major drawbacks of this book. The reason for this is that the English version is simply a translation from the original publication in German, which dates from 1998. In order to show an effort to keep pace with science, the English edition could have been updated with relatively little effort in respect to recent technology development and/or citations. In Chapter 3, Breitling and Dübel elaborate on bispecificity and bifunctionality of antibody fragments and fusions thereof. Here, (potential)

medical applications are stressed and remind the reader of the important fact that recombinant antibody technology bears a vast application potential and is not of "purely scientific" interest. The widespread field of immunotoxins is described and illustrated by clear figures. The fourth chapter finally deals with the production and purification of recombinant antibody fragments. First, as a basis the amino acid numbering system is explained. Rather late in the book, important terms like affinity and specificity are defined. On the following pages the pros and cons of various expression systems for recombinant antibody fragments are discussed, nicely showing that *E. coli* is not necessarily the one and only choice, though being the best characterized. A general overview on various modern purification techniques closes this story on recombinant antibodies.

Certainly, Mike Clark in his review on the book (*Immunol. Today* 2000, 21, 412) was right when mentioning that certain aspects in recombinant antibody technology were not covered sufficiently by the authors. On the other hand, Frank Breitling and Stefan Dübel never meant to accomplish a comprehensive text book on this piece of science but, as mentioned above, gave us a convenient collection introducing the interested reader to the field and giving her/him important literature references as starting points for in-depth reading. Therefore, this book should be recommended to every assistant or student who intends to get involved in the fascinating antibody field—and it may well become the reason for the first night spent in the laboratory.

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