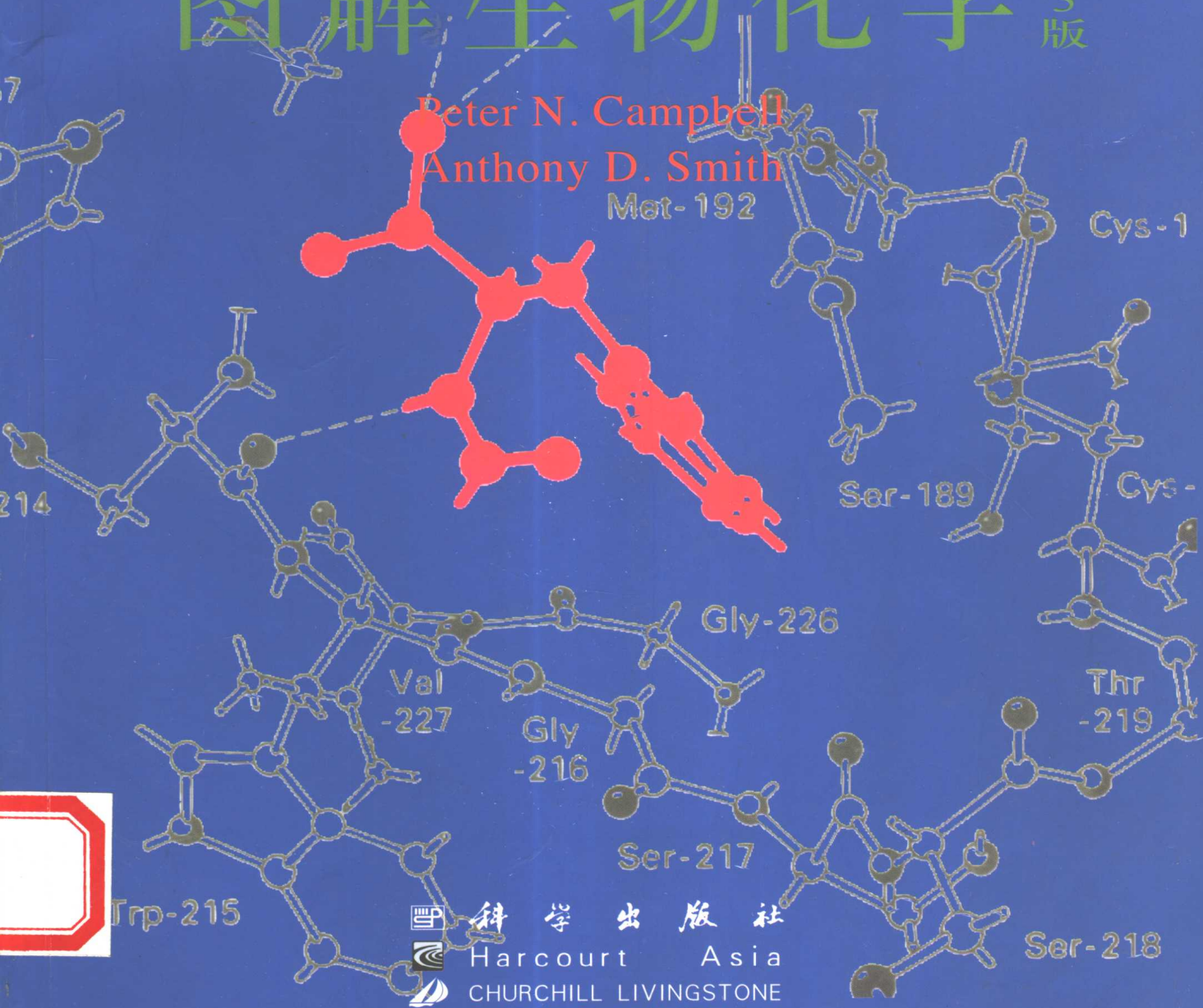


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BIOCHEMISTRY ILLUSTRATED

图解生物化学 第3版

Peter N. Campbell
Anthony D. Smith
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CHURCHILL LIVINGSTONE

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第 3 版

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BIOCHEMISTRY ILLUSTRATED

AN ILLUSTRATED SUMMARY OF
THE SUBJECT FOR MEDICAL AND
OTHER STUDENTS OF BIOCHEMISTRY

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PREFACE TO THE THIRD EDITION

Although this third edition is only about 15 pages of text longer than the second edition, we have reassessed every page and as a result have incorporated more than 150 new figures. Some of the more simplistic figures in the previous editions have been removed to allow us to incorporate developments at the growing points of biochemistry and molecular biology.

Although in producing the first edition we did not intend that the text should be a substitute for the standard textbooks we are aware that there is an increasing call for a slim text. There are three main reasons for this. First, the increase in our knowledge of biochemistry and molecular biology means that many of the standard texts are beyond the reach of many students in terms of both bulk and cost. Second is the demand of students and teachers that the amount of factual material in their courses should be reduced. We see this in the request of the General Medical Council in the UK for a core curriculum for medical students. Third, an increasing lack of understanding of English among students in many countries where formerly it was well taught. In producing a third edition we have taken account of these tendencies by increasing the amount of text so that the book might serve as a stand-alone textbook with suitable supplementation from lectures, tutorials and other reading.

Our illustrator, Sue Harris, was not available for this edition. We have been very fortunate in having the cooperation of our new illustrator, Jane Templeman, who has readily understood our requests and has produced many fine illustrations. We are indeed grateful to her.

Finally, it is a pleasure to thank all those friends throughout the world who have sent in their corrections and suggestions for improvements. We hope that with a new edition we will continue to receive such suggestions but hopefully not so many that concern our errors.

1993

P.N.C.
A.D.S.

PREFACE TO THE FIRST EDITION

The purpose of this book is to provide a survey of biochemistry in an easily assimilable form. We had in mind firstly students who might appreciate a succinct summary of some of the tenets on which a more advanced study of biochemistry is based. We hoped we might even encourage some students to develop their thirst for more extensive texts. Secondly we were aware of the needs of students in developing countries, who may not be too conversant with English. We thought it might be helpful to the students if the teachers could refer to clear diagrams in a modest book. Thirdly we wished to assist all those who, while not specializing in biochemistry, want to be aware of the major trends in the subject. In this respect we hope the book may prove useful to school teachers, physical scientists and medical doctors.

In making our choice of subject matter we have aimed at the student of medicine and the biochemistry student who is primarily interested in animals. We are aware that our choice has been arbitrary and we would be delighted to have suggestions concerning the subject matter and how we could improve the presentation.

We have of course worked within certain constraints. Firstly we have confined ourselves to about 200 pages, and secondly we have used only one colour in addition to black and white. As authors we consider we have been very fortunate in our collaborators: the artist, Sue Harris, worked closely with us, producing clear diagrams from our rough outlines; and the publishers have helped to keep us on sensible lines. In addition we thank Professor Maharani Chakravorty, Professor A. D. Patrick and Dr Ton So Har for their critical reading of the manuscript, and assisting us to ensure accuracy. We are more than grateful to all the numerous people and organizations who have given permission for the use of figures which we have redrawn from previous publications. We have a special debt to all our colleagues in the Courtauld Institute and elsewhere on whom we have called for expert advice on many occasions.

1982

P.N.C.
A.D.S.

A NOTE ON THE LAYOUT

The left hand column contains the section headings and a very brief summary of the subject matter. Further details are contained in the right hand column which is also where the illustrations are presented.

Each page is numbered so that it seemed unnecessary to number separately the illustrations. Where more than one illustration is presented they are lettered A, B, C, etc. It should therefore be easy for a lecturer to refer the students to a particular illustration.

At the first mention of an important word it is presented in italics. The word will also appear in the index together with other entries.

Rather than acknowledge each figure separately we have grouped the acknowledgements together. The division of the text into frames does not in any way imply that the book can be used as a teaching programme. It is intended that it be used in conjunction with more complete textbooks and a course of lectures.

The arrangement of carbohydrate and fat metabolism is unusual, but is based on experience of teaching medical students over a number of years. The division of pathways involved in the synthesis and degradation of energy-storage compounds into the fed and fasting states of metabolism has been found to give students a lasting understanding of the functions of these pathways. It also leads to a ready analysis of many clinical metabolic problems. Structural lipids and carbohydrates are described under the subject of membranes, to which they are functionally related.

Whilst some of the diagrams may seem to contain more information than appears necessary in a short summary (e.g. detailed structures of active sites), we felt that such additional detail does not in any way obscure the essential concept being conveyed, and gives an authentic basis for a more precise examination of the concept by students who wish to think more deeply about the subject.

ACKNOWLEDGEMENTS

The authors are pleased to acknowledge the source of those illustrations in the book which have been based on illustrations published elsewhere and to acknowledge the assistance of those who have helped in the preparation of various illustrations. Our acknowledgements have been grouped as follows:

- a. The authors and publishers of books and original reports in journals. This list may also be of value to those who wish to extend their reading.
- b. Those persons and companies who have provided material from their own sources.

In all cases the numbers in [] refer to the number of the illustration in the present book. The other numbers refer to the original source.

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Apart from the editors, the authors were J.B.C. Findlay, H. Hassall, R.P. Hullin, A.J. Kenny and J.H. Parish.
Figs 2.8 [11B], 2.10 [12A], 2.15 [11A], 4.10 [20A], 4.16 [14A], 4.18 [15A], 5.24 [75A], 12.3 [93C], 12.12 [100B], 12.16 [103B], 12.23 [105A], 12.25 [106B], 12.27 [107A]. Tables 2.8 [15B], 4.2 [15C].
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J. Wiley, New York.
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3rd edn, Figs 2.44, 2.45 [19A], Fig 3.16 [12B], 29.24 [110A], 29.29 [123A].
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Fig 7.10 [49A].
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Fig. 1.75B[146B].
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Figs 1.12 [62A, B], 1.13[65A], 10.3 [66B], 12.13 [61B].
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Illustration © 1982 Neil Hardy, p. 272 [113A], p. 344 [45A].
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1st edn Figs 8.24 [92B], 8.59 [2C].
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Fig. No.	Ref. No.	Fig. No.	Ref. No.	Fig. No.	Ref. No.	Fig. No.	Ref. No.
2B	2.20	43A	2.13	104A,B	2.22	201B	1.7
2C	2.12	43B	4.1	105A	1.1	204A	3.16
3A-C	2.20	44A	2.15	106B	1.1	214B	5.12
4A	5.3	44B	2.17	107A	1.1	215A	5.12
5A	2.2	45A	2.11	107B	2.9	221B	4.7
6B	2.2	46B	4.8	108	5.17	228B	3.12
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31B	5.10	82A	3.5, 5.15	137B	4.2	276B	4.8, 5.8
32B	5.7	87A	1.6	146B	1.10	227A,B	3.12
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33B	2.18	91A	5.19	161B	2.6	280A	4.13
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38B	4.1	97B	1.4	185B	4.10	283B	3.21
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41B	4.5	99B	2.9	189A,B	1.3	285B	3.19
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