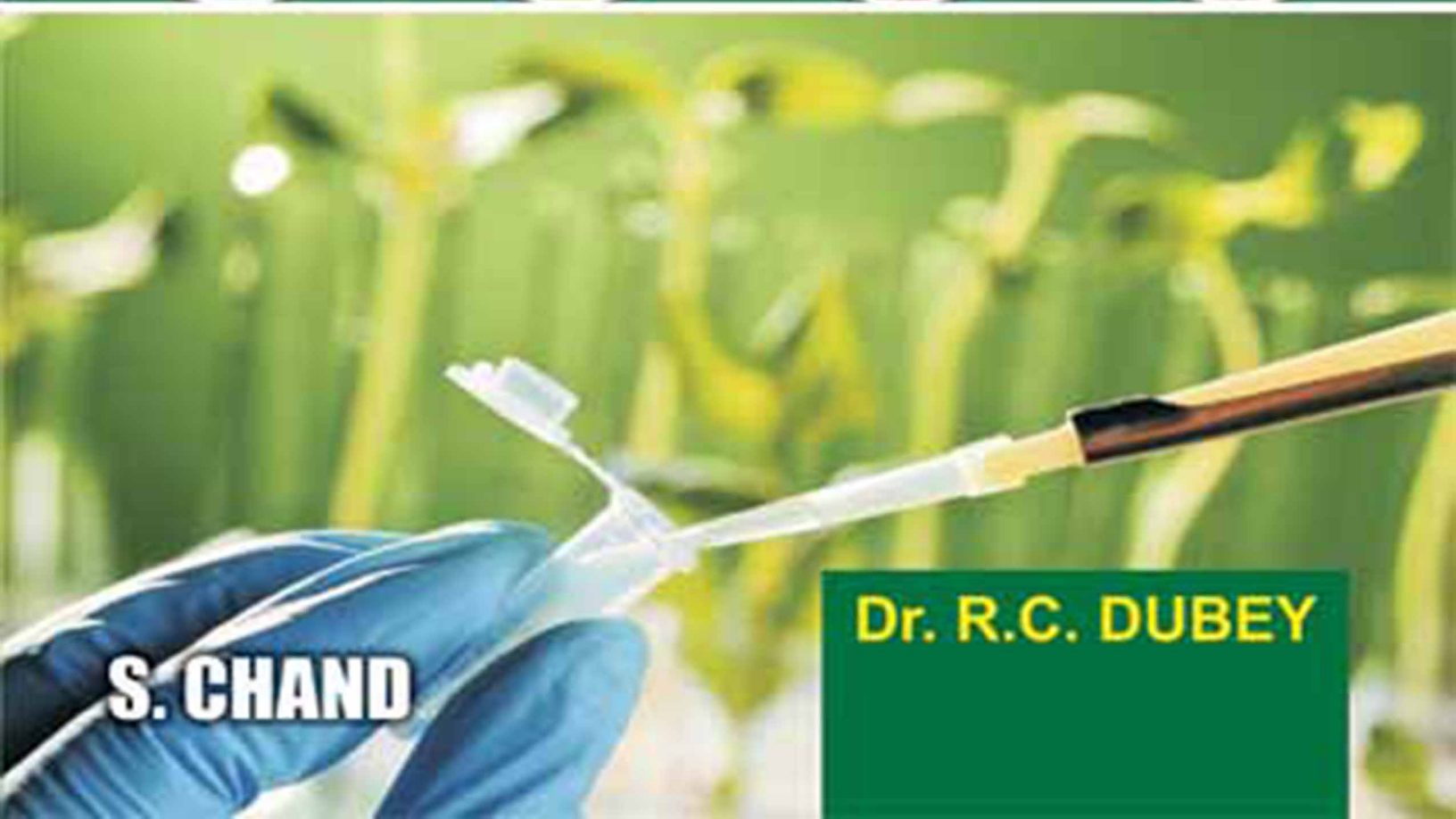


Revised Edition

A Textbook of Biotechnology



S. CHAND

Dr. R.C. DUBEY

A Textbook of **Biotechnology**

[For University and College Students in India and Abroad]

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PREFACE TO THE FIFTH EDITION

I feel pleasure in bringing out the thoroughly revised, corrected and condensed edition of **A Textbook of Biotechnology**. Hopefully this edition will be useful for all University/College students where biotechnology is being taught at Undergraduate levels. It will also be useful to all those students who are preparing for civil and various competitive examinations.

Due to expanding horizon of biotechnology, it was difficult to accommodate the current information of biotechnology in detail. Therefore, a separate book entitled **Advanced Biotechnology** has been written for the Postgraduate students of Indian University and Colleges. Therefore, the present form of **A Textbook of Biotechnology** is totally useful for undergraduate students. A separate section of Probiotics has been added in Chapter 18.

Chapter 27 on Experiments on Biotechnology has been deleted from the book because most of the experiments have been written in 'Practical Microbiology' by R.C. Dubey and D.K. Maheshwari. Bibliography has been added to help the students for further consultation of resource materials.

I am thankful to the management and the editorial team of S. Chand & Company Pvt. Ltd. for all help and support in the publication of this book.

Reader's perception in the form of constructive suggestions and valuable comments for improvement of this book is highly appreciated.

Dr. R.C. Dubey

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PREFACE TO THE FIRST EDITION

Recently, biotechnology has been introduced in syllabi of most of the universities, at the undergraduate and/or postgraduate level(s), either as a separate paper or a part of it. The author has been teaching biotechnology for the last two years and realises the problems of students. Therefore, this book is compiled to provide the students, the current informations on different areas of biotechnology. The author does not claim this as his original research work. It is merely an outcome of the compilation of researches done by the scientists in different areas of biotechnology in India and abroad. Help has been taken from a number of standard books, journals, research and review papers to update the knowledge.

This book embodies five different parts, divided in seventeen chapters. The language of the text is simple and the subject matter is fully illustrated. Some of the figures have been drawn by the author himself. Sources of such figures and tables that are modified and presented in the text, are duly acknowledged in their legends. At the end of each chapter, some relevant problems are given which would help the students to grasp the matter.

A short reference of the source materials and the subject- index are listed at the end of the book. In the references, the title of each paper is omitted just to save the space in this elementary book.

The author thanks the researchers, authors of books, publishers, editors whose publications have helped him in making out the text.

I express my indebtedness to Prof. R.S. Dwivedi (my supervisor, C.A.S. in Botany. B.H.U., Varanasi), Prof. J.S. Singh, F.N.A. (B.H.U., Varanasi) and Prof. Bharat Rai, my teacher (B.H.U., Varanasi) who have ever been a source of inspiration.

I must thank my colleagues Prof. S.P. Singh (Head of the Department), Dr. R.D. Khulbe, Dr. Y.P.S. Pangtey, Dr. Sudhir Chandra, Dr. Giribala Pant, Dr. Uma Palni, Dr. Neerja Pandey, Dr. S.C. Sati and Dr. Y.S. Rawat for their help and critical suggestions. The author gratefully acknowledges the help and encouragement given by Dr. R.P. Singh (Head of Forestry Department), Dr. B.K. Singh (Lecturer in Zoology Department) (K.U., Nainital), Dr. C.B. Lal (Gyanpur, Varanasi), Dr. D.B. Singh (Gyanpur, Varanasi), Drs. G.S. Mer, S.D. Tewari, Jeet Ram, and my research students (Mr. H.S. Ginwal and Mr. P.S. Rawat) (K.U., Nainital), Mr. Laxman Pandey and Mr. Rajeev Gaur (B.H.U., Varanasi).

I am grateful to Dr. L.M.S. Palni (Head, Division of Biotechnology, Palampur, H.P.) and Dr. A. Sood (Palampur) for providing a photograph of *in vitro* corm formation in *Gladiolus* sp. for front cover of the book.

Thanks are also due to Mr. P.B. Ghansyal for typing the manuscript and to Mr. R.S. Adhikari for drawing the diagrams. I wish to thank my wife for her endurance during the compilation work of the text. I thank my publishers, especially Sri. R.K. Gupta, S. Chand & Company Ltd. and Sri Navin Joshi, Branch Manager, Lucknow for taking pains in bringing out the book. Constructive suggestions, if any, are welcome.

Dr. R.C. Dubey



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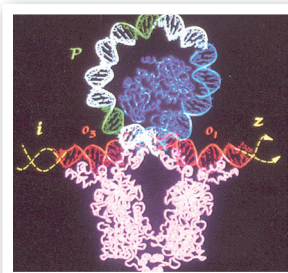
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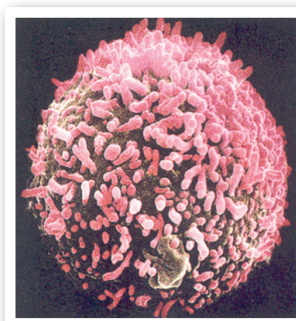


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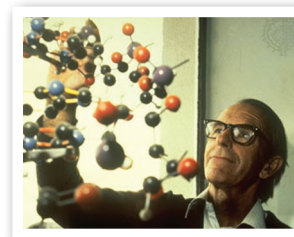
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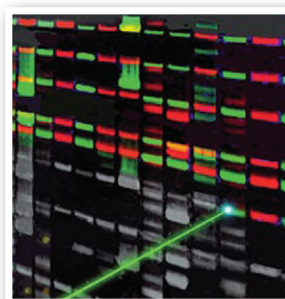


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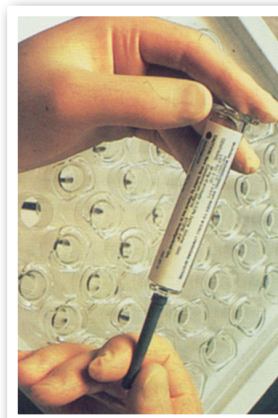
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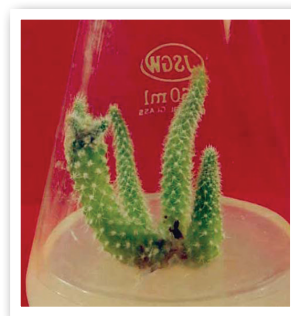
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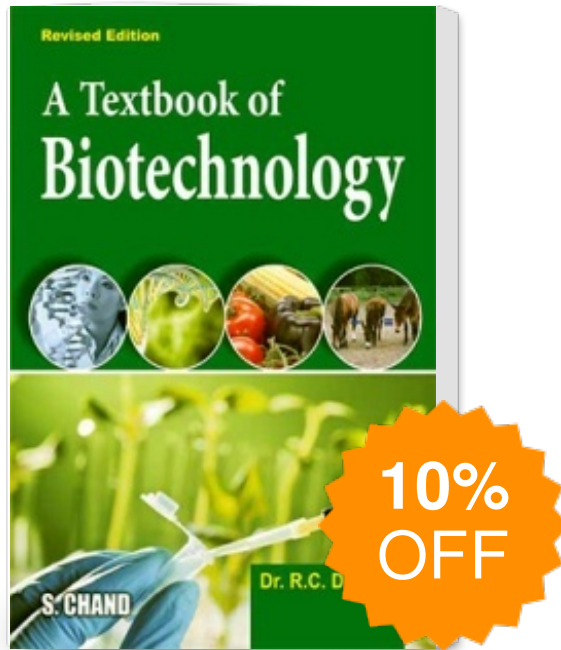


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