

Textbook Of Blue Biotechnology

The term 'Blue Biotechnology' has been used to describe the marine and aquatic applications of biotechnology, but its use is relatively rare. Biotechnology is technology based on biology, especially when used in agriculture, food science, and medicine. Of the many different definitions available, the one formulated by the UN Convention on Biological Diversity is one of the broadest: Biotechnology means any techno-logical application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use."

Introduction, Genetic Engineering, Animal cell and Tissue Culture, Plant Tissue Culture, Gene Transfer Technology (Transfection), Biotechnology in healthy Care, Enzyme Technology, Single Cell Protein, Fermentation Technology, BioFuel Technology, Environmental Biotechnology, Agro Biotechnology, Genetically Modified Organisms.

Agricultural biotechnology plays a significant role in developing agriculturally important crops that provide high yield with enhanced nutritional value and show improved resistance to pathogens. This book, a collaborative endeavour involving contributions from renowned academics from India and abroad,

discusses the techniques of plant tissue culture, the fundamental basis for the development of innovative crop improvement strategies, and emerging paradigms in plant genome research. The book describes the benefits of the production and use of biofertilizers and biopesticides to overcome hazardous effects of chemical fertilizers and pesticides. It explains the importance of microbes in bioremediation and the methods of biomonitoring to target contaminants. Besides, coverage also includes the topics on bioinformatics in agriculture, biodiversity, bioethics, and agricultural pollution. This text is suitable for the under-graduate and postgraduate students of agriculture and biotechnology. It will also be useful to researchers and agronomists.

Textbook of Blue Biotechnology
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Biotechnology Is A Multi-Disciplinary Course, Having Its Foundations In Many Fields Including Biology, Microbiology, Biochemistry, Molecular Biology, Genetics, Chemistry And Chemical Engineering. It Has Been Considered As A Series Of Enabling Technologies Involving The Practical Applications Of Organisms Or Their Cellular Components To Manufacturing And Service Industries And Environmental Management. Initially, Biotechnology Was An Art, Involved In The Production Of Wines, Beers And Cheese. Now It Involves Series Of Advance Technologies Spanning Biology, Chemistry And Process

Engineering. In recent years innovations involving genetic engineering have had a major impact on biotechnology. Its applications are diverse, including the production of new drugs, transgenic organisms and biological fuels, gene therapy and cleaning up pollution. It is also about providing cleaning technology for a new millennium; of providing means of waste disposal, of dealing with environmental problems. It is in short, one of the major technologies of twenty-first century that will sustain growth and development in countries throughout the world for several decades to come. It will continue to improve the standard of our lives, from the improved medical treatments through its effects on foods and food supply and to the environment. No aspect of our lives will be unaffected by biotechnology. This textbook on biotechnology has been written to provide an overview of many of the fundamental aspects that underpin all biotechnology and to provide examples of how these principles are put into operation, i.e. from the starting substrate or feed stock through the final product. The textbook also caters to the requirement of the syllabus prescribed by various Indian universities for undergraduate students pursuing biotechnology, applied microbiology, biochemistry and biochemical engineering.

The present book "A Textbook of Polymer Chemistry" is written for B.Sc., M.S.c.,

B.Tech. And M.Tech. Students of various Indian Universities. All the three sections are immensely useful and extensively fulfils the requirements of polymer materials. Section I of this book deals with the Basic Concepts of Polymers. Polymers contain a very large and diversified family of materials which have entered every aspects of our daily life. Section II deals with the Processing and Applications of Polymers. Section III deals with the Condensation of Polymers

Textbook of Microbiology provides a structured approach to learning by covering all the important topics in a simple, uniform and systematic format. The book is written in a manner suited to the undergraduate and postgraduate of Microbiology / Industrial Microbiology courses. The language and diagrams are particularly easy to understand and reproduce while answering essay type questions. Sections I of the book covers essentials of Microbiology including history, scope and milestones in the development of microbiology. This is followed by detailed accounts of characteristics and classification of microorganisms including bacteria, virus, fungi and actinomycetes. Individual chapters on microscopy, isolation and maintenance of microorganisms, microbial growth provide a detailed account of these techniques and their use in microbiology. Section II of the book covers biochemistry, microbial genetics and some instrumentation including chapters on carbohydrates, proteins, lipids,

nucleic acids, gene regulation, translation and transcription along with detailed accounts of spectrophotometry, pH meter and fermenters. It broadly covers: " Fundamentals of Microbiology " Tools and Techniques used in Microbiology " Basic Biochemistry " Microbial genetics

These topic books cover the most frequently studied options for Biology at Advanced Level. The clear format of these texts will aid students' understanding, whilst extending their knowledge.

This text contains detailed descriptions of both the biology and the biotechnological uses of *Spirulina Platensis*, a blue-green algae, which has been recognized and used worldwide as a traditional source of protein in the food

Textbook of Molecular Biotechnology covers an amazing range of topics from the basic structure of the cell and diversity of microorganisms to the latest techniques in the field of biotechnology. Various topics have been included for the benefit of graduate and postgraduate students. In addition, the book will be of immense help for the researchers and can be used as a laboratory manual for various biotechnological techniques. A number of reputed subject experts, scientists, academicians, and researchers have contributed their chapters to this volume. This book describes the role of basic biotechnological tools in various spheres of human society, namely, agriculture, nutraceuticals, pharmaceuticals,

nanobiotechnology, proteomics, metagenomics and Intellectual Property rights. Textbook and Color Atlas of Traumatic Injuries to the Teeth, Fifth Edition encompasses the full scope of acute dental trauma, including all aspects of interdisciplinary treatment. This new edition embraces the significant advances made in the subject of dental traumatology since the publication of the previous edition in 2007. Thoroughly updated throughout, it includes eight new chapters, including one chapter focused on the development of bioengineered teeth and another on clinical regenerative endodontics. Providing the theoretical background behind the clinical applications, the text is supplemented by a step-by-step online guide to procedures at www.dentaltraumaguide.org. The book is also filled with full-color illustrations throughout—making it the ultimate guide for anyone treating individuals afflicted with dental injuries caused by traffic accidents, sporting injuries, violent assaults, and other falls, crashes, or injuries. New edition of the definitive reference on dental traumatology Thoroughly revised and updated with a modern look and feel Eight new chapters on innovative developments in the field Contributions from world-renowned authors and editors Linked to www.dentaltraumaguide.org with a specific chapter on how the book complements the online guide This comprehensive textbook is an invaluable reference for undergraduate BDS courses worldwide, as well as a core text for

postgraduate pediatric, oral surgery, and endodontics courses.

The use of biocatalysts, employed either as isolated enzymes or whole microbial cells, offers a remarkable arsenal of highly selective transformations for state-of-the-art synthetic organic chemistry. Over the last two decades, this methodology has become an indispensable tool for asymmetric synthesis, not only at the academic level, but also on an industrial scale. This well-established textbook on biocatalysis provides a basis for undergraduate and graduate courses in modern organic chemistry, as well as a condensed introduction into this field. After a basic introduction into the use of biocatalysts—principles of stereoselective transformations, enzyme properties and kinetics—the different types of reactions are explained according to the 'reaction principle', such as hydrolysis, reduction, oxidation, C–C bond formation, etc. Special techniques, such as the use of enzymes in organic solvents, immobilization techniques and modified or artificial enzymes, are treated in a separate section. A final chapter deals with the basic rules for the safe and practical handling of biocatalysts. In this completely revised 6th edition, emphasis has been given to an improved didactic style including colored graphics in order to facilitate a deeper understanding of the underlying principles. New developments, such as transamination, enzyme promiscuity and applications on industrial scale within the field of 'white biotechnology' are

included.

Animal biotechnology is an integral component of agriculture. Supported with over 50 figures and more than 30 tables, this textbook is a must have for undergraduates and postgraduates of various agriculture and animal husbandry academia, teachers, professionals, and researchers in basic as well as applied animal sciences including biotechnology, nutrition, physiology and reproduction. The book covers various topics, including economically important livestock breeds, paradigm shifts in livestock production, biotechnology in animal nutrition and in livestock-assisted reproduction, and genomics and genetic engineering tools in livestock production and management.

This well-accepted book, now in its Third Edition, is an extension of the previous edition. The text has further enriched with more information to understand animal behaviour coherently and scientifically. The book attempts to provide a reasonably suitable account of animal behaviour for undergraduate as well as postgraduate students. Although behaviour of animals has fascinated people for a long, behavioural biology has been incorporated in the syllabi very recently. The study of behaviour received its important boost from the work of Charles Darwin who used the term 'instinct', to refer to the natural behaviour of animals. In the 1930s, a comprehensive theory of animal behaviour emerged through the

work of Konrad Lorenz and, later of Niko Tinbergen. Biological study of behaviour, in fact came of age as a science when Lorenz, Tinbergen and Karl von Frisch received the Nobel Prize for their contribution to science. Observing and describing exactly what animals do is fascinating and scientific analysis of their behaviour is significant for several reasons. Each species tends to have an array of stereotyped behaviours, some of which are shared with related species, but others are unique. Ecology, natural selection, macroevolution, microevolution, and gene constitute the foundation of animal behaviour. Various animal groups exhibit diverse strategies for their survival and reproduction which are discussed in this book. The book is primarily intended for the students of B.Sc./M.Sc. (Zoology/Life Science) for their courses. It would be useful for the researchers in the field of animal behaviour, and conservation biologists. It would also attract students who are pursuing courses in Sociology and Anthropology. Key features

- Presents a well-balanced view of ethology.
- Discusses the current development in the field.
- Includes a glossary of important terms.
- Offers chapter-end questions to check the students' understanding of the concept.

FOR UNIVERSITY & COLLEGE STUDENTS IN INDIA & ABROAD 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.

With its integral treatment of ecosystem and resource management, this is the only overview of the field to address current thinking and future trends. All contributions have been written with the novice in mind, explaining the basics and highlighting recent developments and achievements. Unmatched in scope, this two-volume reference covers both traditional and well-established areas of marine biotechnology, such as biomass production, alongside such novel ones as biofuels, biological protection of structures and bioinspired materials. In so doing, it ties together information usually only found in widely dispersed sources to assemble a grand unified view of the current state of and prospects for this multi-faceted discipline. The combination of the breadth of topics and the focus on modern ideas make this introductory book especially suitable for teaching purposes and for guiding newcomers to the many possibilities offered by this booming field.

Microbial Biotechnology in Food and Health Science, volume one in the Applied

Biotechnology Reviews series, offers two unique sections within the theme of genomics and bioprocessing and the bioengineering of microorganisms in the role of food science and human health. This volume provides review articles as the basis supporting biotechnological research useful to a wide scope of research initiatives. Important relevant information on genomics, proteomics and metabolomics are included as well as the emerging interdisciplinary area of synthetic biology which enables the metabolic engineering of microorganisms to produce pharmaceuticals. Applied Biotechnology Reviews is a series aimed at bringing all aspects of biotechnology as it is applied to food science – from agriculture through product processing into focus through topical volumes. Each volume will cover a relevant application approach in industrial biotechnology. Covers the latest biotechnological research articles on applications of microbes for food and health science Presents research articles to emphasize research methods and techniques useful for research outcomes Analysis detoxification properties of microorganisms in foods Includes methods of bioengineering of microbes to improve human insulin synthesis/recombinant protein

- Chapter wise & Topic wise presentation for ease of learning
- Quick Review for in depth study
- Mind maps for clarity of concepts
- All MCQs with explanation against the correct option
- Some important questions developed by 'Oswaal Panel' of experts
- Previous Year's Questions Fully Solved
- Complete Latest NCERT Textbook & Intext Questions Fully Solved
- Quick Response (QR Codes) for Quick Revision on your

Mobile Phones / Tablets • Expert Advice how to score more suggestion and ideas shared • Some commonly made errors highlight the most common and unidentified mistakes made by students at all levels

Chapter wise & topic wise presentation for ease of learning Quick Review for in depth study mind Maps to unlock the imagination and come up with new ideas Know the links R & br>D based links to empower the students with the latest information on the given topic tips & tricks useful guideline for attempting questions in minimum time without any mistake expert advice how to score more suggestions and ideas shared some commonly Made Errors highlight the most common and unidentified mistakes made by students at all levels ".

Textbook of Algae has been written for undergraduate and postgraduate students of botany. It covers the syllabi of various universities, particularly the most recent syllabus recommended by the University Grants Commission. It will also serve students appearing for various competitive examinations. The book provides a comprehensive and up-to-date account of the occurrence, structure, reproduction, phylogeny and classification of algae. It explains the subject in full detail, with special focus on the life cycles of some common genera. In addition, it discusses the characteristic features of the important forms of algae, the applied aspects; interaction between algae and environment, the protocol for algal identification, and culture and cultivation of algae. The most recent uses of algae, such as they being a source of hydrogen and their use

in the extraction of biodiesel, have also been included. Key Features

- Describes the subject so as to arouse the interest of the student
- Contains more than 275 diagrams to explain various topics to the fullest
- Offers all types of questions: essay type, short answer type, fill in the blanks, true/false, and MCQs to develop a comprehensive ability to face examinations
- A virtual question bank that contains more than 230 essay type questions, 400 short answer type, 180 fill in the blanks, 90 true/false and 300 MCQs.

Biotechnology for Beginners, Second Edition, presents the latest information and developments from the field of biotechnology—the applied science of using living organisms and their by-products for commercial development—which has grown and evolved to such an extent over the past few years that increasing numbers of professionals work in areas that are directly impacted by the science. For the first time, this book offers an exciting and colorful overview of biotechnology for professionals and students in a wide array of the life sciences, including genetics, immunology, biochemistry, agronomy, and animal science. This book also appeals to the lay reader without a scientific background who is interested in an entertaining and informative introduction to the key aspects of biotechnology. Authors Renneberg and Demain discuss the opportunities and risks of individual technologies and provide historical data in easy-to-reference boxes, highlighting key topics. The book covers all major aspects of the field, from food biotechnology to enzymes, genetic engineering, viruses, antibodies, and vaccines, to environmental biotechnology, transgenic animals,

analytical biotechnology, and the human genome. This stimulating book is the most user-friendly source for a comprehensive overview of this complex field. Provides accessible content to the lay reader who does not have an extensive scientific background Includes all facets of biotechnology applications Covers articles from the most respected scientists, including Alan Guttmacher, Carl Djerassi, Frances S. Ligler, Jared Diamond, Susan Greenfield, and more Contains a summary, annotated references, links to useful web sites, and appealing review questions at the end of each chapter Presents more than 600 color figures and over 100 illustrations Written in an enthusiastic and engaging style unlike other existing theoretical and dry-style biotechnology books

Microbiology is the study of microscopic organisms, such as bacteria, viruses, archaea, fungi and protozoa. This discipline includes fundamental research on the biochemistry, physiology, cell biology, ecology, evolution and clinical aspects of microorganisms, including the host response to these agents. CONTENTS
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This book on Wildlife Ecology is designed to be used as a textbook for college and university students for courses on Wildlife Ecology, Wildlife Management and Conservation Biology. Examples are drawn from the tropics where biodiversity is rich, and where natural habitats and wildlife are seriously affected by the increasing human population. Applications of remote sensing and geographic information system, and camera trapping of wild and elusive animals are introduced to students to equip them to be able to take up professional career in wildlife research, management and conservation, using modern tools and trends in ecological sciences.

Multiple choice questions with their answers are also incorporated to help students preparing for competitive examinations.

The book embodies 22 chapters covering various important disciplines of

biotechnology, such as cell biology, molecular biology, molecular genetics, biophysical methods, genomics and proteomics, metagenomics, enzyme technology, immune-technology, transgenic plants and animals, industrial microbiology and environmental biotechnology. The book is illustrative. It is written in a simple language

A comprehensive assessment of European public opinion and biotechnology. It brings together comparative research on policy making, media coverage and public perceptions. This book is the major output from a three-year research initiative undertaken by an international, multidisciplinary team of social scientists. Following an introductory conceptualisation of biotechnology in the public sphere, Part Two brings together information on the policy activity, media coverage and public perceptions of biotechnology in European countries. Part Three is a detailed analysis of a major European survey of public perceptions. Part Four brings together the three elements of the research and provides a synthetic overview of the development of public perceptions of biotechnology in Europe.

Fungi and microbes have predominant influence in our lives. They are directly or indirectly involved in generating the food we eat and drink, besides providing life saving pharmaceutical products, including the sources of enzymes. They play a

vital role in recycling of organic matter and several ecological processes. Both fungi and microbes have contributed several billion dollars worth of technological products. For instance: yeast is used in brewing and bakery, *Lactobacillus* ferments milk to yoghurt and a number of edible mushrooms are rich in nutrients besides possessing many medicinal properties. Bacteria and fungi serve as key organisms in understanding life processes, genetic engineering and as experimental organisms. Therefore, it is necessary to study the biology and biotechnology of these organisms. It is a humble attempt of the authors to make the readers understand the biology and biotechnology of fungi and microbes in a simpler way and also to communicate the recent developments.

Biotechnology is the technical application that uses living organisms or biological systems to make products that have a profound impact on agriculture, environment, and human health. In this text book, a color-coded classification is used to present basic chapters on white, red, green and blue biotechnology. Beside traditional biotechnical processes, the book will address principles of modern biotechnology research and applications. Each chapter has a general introduction and concluding paragraph, gives key terms, will address problems, and recommends additional readings. This text book is ideally suited for advanced graduate or master students and will also be a good reference for PhD

students, physicians, engineers, attorneys, or non-specialist with an interest into biotechnology.

Environmental Biotechnology was conceived after scanning the available literature in the area, which indicated that references in the subject are scanty and highly sporadic. This book provides comprehensive information on the different aspects of environmental biotechnology and also discusses the processes and new technologies dealing with pollutants, degradation and resource recovery. It has been designed to serve as a good study material for the students and researchers in the field. At the end of the book there is an exhaustive reference section to guide the readers for additional reading. The book discusses:

- New approaches to wastewater treatment
- Use of endemic or exotic biota as a nutrient filter to purify nutrient-loaded wastewater and nutrient-enriched eutrophic surface water
- Production of usable primary and secondary biomass using waste, wastewater and wasteland
- Efficient biomass management techniques
- Several emerging areas like microalgal cultivation techniques using wastewater
- Production of value added products from algae
- Statistical approach to analyze the toxic effects of xenobiotics using biological test batteries and biopesticides
- Integrated pest management
- Advanced techniques to study environmental contamination
- Biological experimental procedures to determine the level of contamination

Rely on this comprehensive resource to master the techniques you need to safely obtain quality specimens. You'll understand all the hows and whys that lead to success in this rapidly changing field. Inside, you'll find the up-to-date coverage of routine procedures and their complications as well specialized procedures, quality and infection control, state-of-the-art

equipment, medical terminology, ethical and legal issues, body systems, and related diagnostic laboratory tests.

This book describes the discovery of molecules from unexploited extreme marine environments, and presents new approaches in marine genomics. It combines the current state of knowledge in marine genomics and advanced natural products' chemistry to pursue the sustainable production of novel secondary metabolites (lead compounds), as well as pharmacologically active peptides/proteins, with antimicrobial, neuroprotective, anti-osteoporotic, anti-protozoan/anti-plasmodial, anti-ageing and immune-modulating effects. Further, it employs molecular-biology-based approaches and advanced chemical techniques to obtain and to select candidate compounds for pre-clinical and clinical studies.

The Fourth Edition of the compendium pools together the knowledge and experience of experts from all over the world, who are engaged in teaching and research in the field of biochemistry, medical sciences and allied disciplines. Comprising 20 sections, the present edition of the book has been substantially revised incorporating the latest research and achievements in the field. Beginning appropriately with chemical architecture of the living systems, role and significance of biochemical reactions, organization of specialised tissues, and importance of food and nutrition, the book explores beyond traditional boundaries of biochemistry. The knowledge of various organ systems has been expanded covering their normal function, ailments and dysfunction. A chapter on Eye and Vision explaining molecular basis of cataract and glaucoma have been added. Also, the book introduces stem cells and regenerative therapy and defines molecules associated with pleasure, happiness, stress and anxiety. A Section on Gastrointestinal and Biliary System elaborates on physiology and

dysfunction including fatty liver and its implications, and hepatitis viruses. The knowledge of Human Genetics and Biochemical Basis of Inheritance has been appropriately expanded to reflect the latest advances in various domains. Besides DNA fingerprinting for identity establishment, the Section discusses epigenetics, micro-RNA and siRNA including their role in gene expression, chromatin modification and its association with human diseases, and genetic engineering. It also explores emerging areas such as metabolomics and proteomics; synthetic biology; and dual use technology in bioterrorism. Due emphasis has been given to the Section on Cell Replication and Cancer. Emergence of the use of probiotics in human health has also been highlighted. Besides, an entire Section has been devoted to male and female reproductive systems, fertilization, implantation, pregnancy, lactation, and assisted reproductive technology. Immunology, including vaccines and immunization, has been given due attention with latest updates in this fast growing area. Modern medicine, despite its stupendous advances cannot provide cure for all ailments. Thus, the new edition provides knowledge of alternative medicine systems—Ayurveda, Homeopathy, Unani, Yoga and Herbal Medicine. Incorporating vast information on the latest and emerging areas, the book will be of immense value to the students of medical sciences not only in their preclinical years, but also in all phases of medical course including postgraduate education and practice. Besides, it will also serve as a valuable source to the students of biochemistry and human bi

For Degree and Post Graduate Students.

This well-accepted book, now stands in its second edition, is a time-honoured revision and extension of the previous edition. Beginning with an introduction to the study of animal behaviour, the book explains the various aspects of behavioural biology incorporating a wealth

of information from molecular biology, neurobiology, and socio-biology with a new approach. It describes different kinds of innate and learned behaviours, animal communications, defensive behaviours such as camouflage and mimicry with suitable illustrations. The book incorporates the introductory concepts of biomimicry in an attractive manner. Further, it discusses biorhythms, migration in fish and birds, in addition to evolution and physiological basis of migration. The text also presents the important aspects of socio-biology and social behaviours, such as feeding, adaptation, prey defence, territoriality, aggression, altruism, sexuality, and parental care. Finally, it provides discussions on behavioural ecology in the context of conservation biology, and human behaviour. The book presents the basic principles of animal behaviour with the aid of carefully selected examples from both the recent and classic literature along with an emphasis on readability. In the present edition, topics like eusociality and behavioural theories have been incorporated. This edition also includes as many as 11 published articles by the author on different topics related to the subject matter in box format to further strengthen the text. The book is primarily intended for the students of B.Sc./M.Sc. (Zoology/Life Science) for their courses. It would be useful for the researchers in the field of animal behaviour, and conservation biologists. It would also attract readership studying Sociology and Anthropology. **KEY FEATURES :** Presents a well-balanced view of ethology. Discusses the current development in the field. Includes a glossary of important terms. Offers end-of-chapter questions to check the students' understanding of the concepts. Algal World has been carefully written and edited with an interdisciplinary appeal and aims to bring all aspects of Algae together in one volume. The 22 chapters are divided into two different parts which have been authored by eminent researchers from across the world. The

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first part, Biology of Algae, contains 10 chapters dealing with the general characteristics, classification and description of different groups such as Blue Green Algae, Green Algae, Brown Algae, Red Algae, Diatoms, Xanthophyceae, Dinophyceae, etc. In , it has two important chapters covering Algae in Extreme Environments and Life Histories and Growth Forms in Green Algae. The second part, Applied Phycology, contains 12 chapters dealing with the more applied aspects ranging from Algal Biotechnology, Biofuel, Phycoremediation, Bioactive Compounds, Biofertilizer, Fatty Acids, Harmful Algal Blooms, Industrial Applications of Seaweeds, Nanotechnology, Phylogenomics and Algal culture Techniques, etc.

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