

Principles and Concepts of MICROBIAL SCIENCE

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VITAL BIOTECH PUBLICATION

Kota, Rajasthan, India

<http://www.vitalbiotech.org/bookpublication/>

An International Publishers

VITAL BIOTECH get Accredited by following International organization



<https://www.portico.org/publishers/vital/>

101 Greenwich Street, 18th Floor

New York, NY 10006

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Published by Vital Biotech Publication

First Edition: 2026

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Product Form:

Digital download, online and hard bound

Edition:

ISBN: 978-81-69356-02-2

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Printed at: Vital Biotech Publication, Kota

Preface

Microbial science forms the cornerstone of modern biological sciences, offering profound insights into the structure, function, diversity, and significance of microorganisms that influence every aspect of life on Earth. From maintaining ecological balance and driving biogeochemical cycles to advancing medicine, agriculture, biotechnology, and environmental sustainability, microorganisms continue to shape scientific innovation and human welfare. A sound understanding of microbial principles is therefore indispensable for students and professionals in the life sciences.

Principles and Concepts of Microbial Science has been written to provide a clear, comprehensive, and up-to-date introduction to the fascinating world of microorganisms. The book systematically presents the fundamental concepts of microbiology, including microbial diversity, cell structure and function, nutrition, metabolism, genetics, growth, control of microorganisms, host-microbe interactions, immunology, microbial ecology, industrial microbiology, and recent advances in molecular and applied microbial sciences. Emphasis has been placed on presenting scientific concepts in a logical, reader-friendly manner while maintaining academic rigor.

This book is primarily intended for undergraduate and postgraduate students of microbiology, biotechnology, agriculture, veterinary science, medicine, pharmacy, environmental science, and allied disciplines. It will also serve as a valuable reference for researchers, educators, and professionals seeking a concise yet comprehensive understanding of microbial science.

As the sole author, I have endeavoured to compile reliable and current information from established scientific literature while ensuring clarity and accessibility. I sincerely hope that this book will inspire curiosity, strengthen conceptual understanding, and encourage readers to appreciate the indispensable role of microorganisms in science, technology, and society. I welcome constructive suggestions from readers for the continued improvement of future editions.

Dr. Sanjeev Kumar Verma

Dated – 30 June, 2026

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