

PREFACE

I am happy to present this book to my readers, particularly teachers and students. This book covers one of the most fundamental and elaborately studied areas of biology, and provides an overview of the structural and functional aspects of the cell. The cell is undoubtedly the basic unit of life and has all the structural and functional properties required for life. Further, it has also been experimentally demonstrated that any genetic modification desired in an organism has to be made at the cellular level only. Therefore, understanding the cell in the context of its structure and function is essential and inevitable.

The book has been structured such that undergraduates, postgraduates and others can use it, by taking the information suitable for their level. This book can serve as a basic textbook for students of molecular biology, genetics, biochemistry, agriculture and biotechnology, or as a reference book for those interested in learning the fundamentals of cell biology, in particular, the origin, organization and functions of subcellular components and cell types.

The architecture of the cell is unique and there is no equivalent to it. The cell is the only system that has the ability to harvest the physical and chemical properties of atoms and create a unique biological phenomenon—life. In the endeavour to understand this miracle, a plethora of information has been accumulated. Condensing this information into a concise book, but without compromising on the essential details, has been a hard but deeply satisfying task. Wherever possible, I have also made an attempt to blend theology and sociology with biology, to convey that all fields are interconnected and cannot be studied in isolation.

The book has been divided into 20 chapters—beginning with the origin of biological systems and ending with tools for the study of cells. At the end of each chapter there is a summary to aid quick revision, model questions to test understanding, and references for further reading. Every effort has been made to include the most recent information. Each chapter is provided with an adequate number of illustrations generated by myself. However, the concept and information needed for drawings and text were extracted from various sources based on pedagogy. The information obtained from other sources is acknowledged and sufficiently updated to suit the text and recent developments.

Most cell biology books are concise and lack sufficient detail. It is essential that students of life sciences, particularly those majoring in cell biology and wanting to pursue a career in the field of cell and molecular biology, learn the subject in a comprehensive manner. A clear understanding of the subject helps one to appreciate nature's ingenuity in the creation of life and apply the knowledge in the laboratory and field. Textbooks should not merely be the means to prepare for examinations or interviews. A textbook must expose students to the essence and essentials of the cell and its interactive environment, beginning from the perplexing origin of life. Understanding the cell is like understanding ourselves; I have therefore made a sincere attempt to provide relevant information. I welcome suggestions from readers to further improve the book.

I would like to thank a number of people for the encouragement and inspiration they have given me while writing this book. I want to thank Dr. Tong-man Ong, Chief, Microbiology Section, National Institute for Occupational Safety and Health (NIOSH), Morgantown, West Virginia, USA, and Dr J Nath, Professor, West Virginia University (WVU), Morgantown, West Virginia, USA, for their guidance, and for providing research facilities during my PhD and postdoctoral program in USA.

I acknowledge with deep gratitude the suggestions and encouragement given by Dr MR Jayaram, Chairman, Gokula Education Foundation (GEF), MR Seetharam, Vice-Chairman, GEF and Director, MSRIT, MR Kodandaram, Director, GEF, Dr K Rajanikanth, Principal, MS Ramaiah Institute of Technology (MSRIT), Bengaluru, Dr KV Devaraj, Former Vice-Chancellor, University of Agricultural Sciences (UAS), Dr M Udaya Kumar, Professor, Department of Crop Physiology, UAS, Dr MV Nagaraj Setty, UAS, and Mr Veerabadraiah, UAS, Bengaluru.

I am grateful to the staff and management of Universities Press and Orient Blackswan for their editorial assistance and the fine production of this book. I especially thank Ms Javanthi Singaram and Ms Ramaa Kishore for their careful editing, and MacroTex Solutions, Chennai, for the typesetting.

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