

Mammalian Cell Technology

and Its Applications

Second Edition

Mammalian Cell Technology and Its Applications has been thoroughly revised keeping in view the developments in the recent past in the field of 'Regenerative Medicine'. The book is now divided into five sections consisting of sixteen chapters, which now appears to be most convenient for the diverse backgrounds of students starting from basic biology to the bioengineering discipline. Since, animal cell technology commands proper understanding of cell biology, DNA technology, immunology and bioengineering, the goal of this book is to amalgamate knowledge from these fields and pass these on to the readers who intend to start their professional career in academics or in industrial research.

An animal cell is a unique factory, where thousands of genes are encoded and transcribed. Products are translated, and finally processed to biologically active molecules. It is therefore, important to understand the inside of a cell, how cellular functions are coordinated, what are the limitations of a cell, and reasons for proliferation and cellular death. In this revised version, the first two chapters are dedicated to basic cell biology aspects, which will orient the students from other backgrounds. The second section covers basic cell culture technology, which consists of preservation and control of cell lines, cell culture media, good manufacturing practices, cell culture equipment, culture environment and methods, etc. In the third section, recombinant therapeutic proteins, large-scale cell culture, and scale-up processes are discussed. The fourth section has been thoroughly revised providing detailed aspects of cell-based therapeutic applications for human (animal) diseases. The first part of this section covers basic aspects of different 'stem cells' and how they are derived. The next two chapters are dedicated to 'regenerative medicine' where tissue engineering and cell therapy approaches have been elucidated. The last section of the book deals with the analytical techniques used in cell culture practices and protocols for isolation of cells, etc.

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