

Preface

This book is a valuable compilation of topics, ranging from the basic to the most complex theories and principles in the field of stem cell. It talks in detail about the various methods and applications of stem cell in our bodies. Stem cells refer to the undifferentiated biological cells present in multicellular organisms. These cells, through mitosis, can divide to produce many more stem cells. The text will give thorough insights into this subject area. The topics like embryonic stem cells and adult stem cells will be discussed in detail in the text. As this field is emerging at a rapid pace, the contents of the book will help the readers understand the modern concepts and applications of this subject.

Given below is the chapter wise description of the book:

Chapter 1- Stem cells are biological cells that split to form more stem cells. They can be located in organisms, which are multicellular. Stem cell lines are a group of stem cells that are nurtured in vitro and can be spread manually. The chapter on stem cell offers an insightful focus, keeping in mind the complex subject matter.

Chapter 2- The basic characteristic of a stem cell is its ability to regenerate tissues. The types of stem cells elucidated in this section are embryonic stem cells, adult stem cells, cancer stem cells, induced pluripotent stem cells, hematopoietic stem cells, mesenchymal stem cells, neural stem cells etc. Stem cells can best be understood in confluence with the major types listed in the following text.

Chapter 3- Stem-cell therapies are used to treat diseases. One of the most common forms of stem cell therapy is bone marrow transplant. In recent times, a lot of focus is put on the application of stem cell treatment for diseases such as diabetes and heart diseases. Many controversies related to stem cell therapy have also been discussed in this chapter. Some of these are human embryonic stem cells clinical trials, stem cell controversy and hematopoietic stem cell transplantation. This chapter is an overview of the subject matter incorporating all the major aspects of stem cell therapy.

Chapter 4- Bone marrow is the tissue found in the interior of the bones. There are two types of bone marrow, red marrow and yellow marrow. Red blood cells and most of the white blood cells are found in the red marrow. At birth all the bone marrow is red but with age it converts itself into the yellow type. This section will provide an integrated understanding of bone marrow.

Chapter 5- The significant aspects of stem cell are cell potency, cellular differentiation, epigenetics in stem-cell differentiation and stem cell laws. Cell potency is the cell's capability of changing from one cell type to another whereas embryonic stem cells are

cells, which can regenerate and differentiate as per the requirements within the body. The aspects elucidated are of vital importance, and provide a better understanding of stem cells.

Indeed, my job was extremely crucial and challenging as I had to ensure that every chapter is informative and structured in a student-friendly manner. I am thankful for the support provided by my family and colleagues during the completion of this book.

Editor