

Preface

This book provides a unique parallel view on animal and plant stem cells from various aspects. The book maximizes reader's insight into research and application in its endeavor to understand the nature of these cells; their sources and categories; engineering of these cells, reprogramming of their functions, and their role as novel cellular therapeutic approach. Written by the author who has already published books and articles in this field, this new one focuses on all aspects of stem cells that were omitted in previous (such as expansion, propagation in culture, metabolic aspects) and gives the specific, multifaceted insight into the world of stem cells this time enriched with contribution of the second author who is the expert in plant cell domain. For plants, it is characteristic indeterminate growth pattern, requiring specific features of their stem cells. In contrast, the animal body plan is mostly defined during embryonic development, and adults generally lack pluripotent stem cells. These features make certain crucial differences between plant and animal stem cells, although there are many similarities in their structure and mechanisms of functioning. This course enhances reader's understanding of plant and human ordinary stem cells, their similarities and differences. It introduces the concepts of emergence of cancer stem cells and different modalities in targeted cancer stem cell therapies. The book treats both theoretical and practical aspects of stem cell research and application and covers many different applications with their advantages and limitations. It is a valuable source of fresh information for academics and researchers, giving an intriguing insight into molecular mechanisms of animal and plant stem cell regulation and their usage for therapeutic applications. It will be a great source of information for students at different level of their education in the fields that require medical and bioengineering background, since it includes cases

that illustrate and explain mechanisms, interactions, targeted effects, and multi-modal therapeutic approaches. This work explores the intersection between animals and plants and explains their co-operative role in life. Academics, researchers, and those who want to expand their knowledge in this field will find this to be an exceptional source of references.

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Animal and Plant Stem Cells
Concepts, Propagation and Engineering
Pavlovic, M.; Radotic, K.
2017, XVII, 234 p. 41 illus., Hardcover
ISBN: 978-3-319-47761-9