

# Advances in Experimental Medicine and Biology

Volume 1139

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# Stem Cells Heterogeneity in Cancer

 Springer

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# Preface

This book's initial title was "Stem Cells Heterogeneity." However, due to the current great interest in this topic, we were able to assemble more chapters that would fit in one book, covering stem cell biology under distinct circumstances. Therefore, the book was subdivided into three volumes entitled: *Stem Cells Heterogeneity-Novel Concepts*, *Stem Cells Heterogeneity in Different Organs*, and *Stem Cells Heterogeneity in Cancer*.

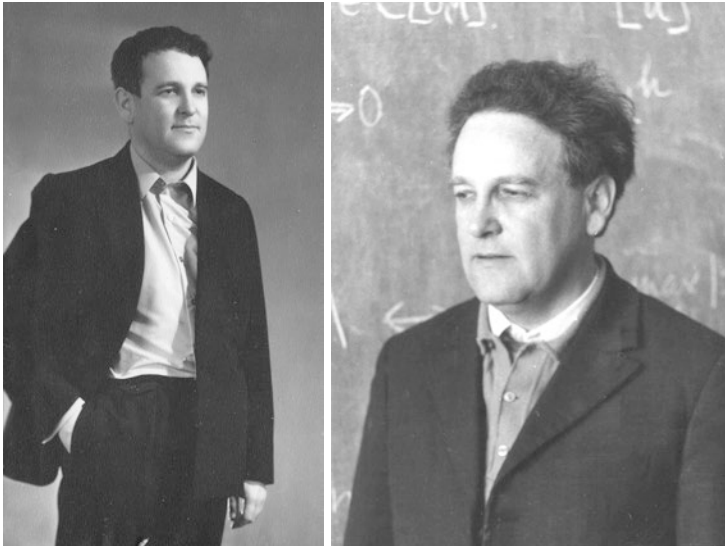
This book, *Stem Cells Heterogeneity in Cancer*, presents contributions by expert researchers and clinicians in the multidisciplinary areas of medical and biological research. The chapters provide timely detailed overviews of recent advances in the field. This book describes the major contributions of stem cells to different cancer types. Further insights into the biology of stem cells will have important implications for our understanding of organ development, homeostasis, and disease. The authors focus on the modern methodologies and the leading-edge concepts in the field of stem cell biology. In recent years, remarkable progress has been made in the identification and characterization of stem cells in several tissues using state-of-the-art techniques. These advantages facilitated the identification of stem cell subpopulations and definition of the molecular basis of stem cell role within different organs in disease conditions. Thus, the present book is an attempt to describe the most recent developments in the area of stem cell heterogeneity which is one of the emergent hot topics in the field of molecular and cellular biology today. Here, we present a selected collection of detailed chapters on what we know so far about the stem cells in cancer. Twelve chapters written by experts in the field summarize the present knowledge about stem cell heterogeneity in cancer.

Theo Mantamadiotis and colleagues from the University of Melbourne, Alice Hoy Building, discuss the heterogeneity of glioblastoma stem cells. Andreas E. Albers and colleagues from Berlin Institute of Health describe the heterogeneity in head and neck squamous cell carcinoma stem cells. D. Prabavathy and Niveditha Ramadoss from Sathyabama Institute of Science and Technology compile our understanding of small cell lung cancer stem cell heterogeneity. Caecilia Sukowati from the University of Udine updates us with what we know about heterogeneity of hepatic cancer stem cells. Joana Paredes and colleagues from the University of

Porto summarize current knowledge on the heterogeneity and plasticity of breast cancer stem cells. Mary Hendrix and colleagues from Shepherd University address the importance of melanoma stem cell heterogeneity. Hiroyuki Tomita and colleagues from Gifu University focus on the heterogeneity of colon cancer stem cells. Jiri Hatina and colleagues from Charles University introduce our current knowledge about the heterogeneity of urothelial cancer stem cells. Theodoros Karantanos and Richard J. Jones from Johns Hopkins University talk about the heterogeneity of acute myeloid leukemia stem cells and its clinical relevance. Marc G. Berger and Céline Bourgne from Clermont Auvergne University talk about the contribution of chronic myeloid leukemia as a disease model to define and study clonal heterogeneity. Dominique Heymann and colleagues from the University of Sheffield focus on osteosarcoma stem cell heterogeneity. Finally, Alain G. Zeimet and colleagues from Medical University of Innsbruck give an overview of the heterogeneity of ovarian cancer stem cells.

It is hoped that the articles published in this book will become a source of reference and inspiration for future research ideas. I would like to express my deepest gratitude to Veranika Ushakova, my wife, and Mr. Murugesan Tamilsevan, from Springer, who helped at every step of the execution of this project.

This book is dedicated to the memory of my grandfather Pavel Sobolevsky, PhD, a renowned mathematician, who passed away during the creation of this piece.



**My grandfather Pavel Sobolevsky z"l, PhD (March 26, 1930–August 16, 2018)**

Belo Horizonte, MG, Brazil  
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Alexander Birbrair

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