

Stem Cell Biology and Regenerative Medicine

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David S. Allan • Dirk Strunk
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Regenerative Therapy Using Blood-Derived Stem Cells

 Humana Press

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Preface

Blood has long been viewed as a conduit for therapy, stemming from the ancient days of phlebotomy to remove evil humors to the development of successful blood transfusions to replace missing blood components. The identification and characterization of hematopoietic stem cells by Drs. Till and McCulloch revolutionized the field and soon after, non-hematopoietic stem and progenitor cells were characterized from the blood and bone marrow. Some of these cell types and various blood-derived cell lineages are involved in the repair of various types of tissue damage that span the spectrum of medical disorders. The goal of this book is to provide an up-to-date review of the various types of blood-derived cells with regenerative capacity, identify opportunities for intervention by examining specific clinical applications, and recognize the regulatory environment that will encompass future therapies in regenerative medicine.

Through the contributors to this volume, we have succeeded in providing insight on numerous blood-derived cell types, including endothelial progenitors, mesenchymal stromal/stem cells, umbilical cord blood-derived undifferentiated somatic stem cells and others. Further, the concept of using umbilical cord blood is discussed throughout the book and several authors describe the current status of regenerative therapy for cardiac disease and neurological disorders. Technical and conceptual issues such as *ex vivo* expansion and the generation of induced pluripotent stem cells are covered and regulatory insight from various jurisdictions provides a degree of clinical relevance that may shape the immediate future of regenerative medicine.

We wish to thank the many contributors for their tremendous commitment and their precious time in preparing the insightful chapters that comprise this book. Some are long-time friends and contacts while others are new and welcome collaborators. All the contributors are dedicated to advancing our collective knowledge regarding the field of regenerative therapy. The cooperation and contributions from our colleagues and fellow authors has been inspirational. The guidance and support from the series editor, Dr. Kursad Turksen has been most valuable and the staff at Springer has been especially helpful in making this project a reality. In particular, we are indebted to the administrative assistance and invaluable editing performed by Monica Farrell and Stéphanie Rochette.

We hope this book will stimulate enquiring minds and future investigation in this exciting and evolving field of research. The community of dedicated researchers and health care providers will need to engage at all levels to continue the push towards viable treatments that improve the lives of patients around the globe.

Ottawa, Canada
Graz, Austria

David S. Allan
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