Foreword

Stem cells raise the prospect of regenerating failing body parts and treating a wide range of disorders that result from tissue loss or dysfunction. Over 16 million patients worldwide suffer from neurodegenerative disorders such as Parkinson's and Alzheimer's disease, over 200 million people suffer from diabetes, and millions more from cardiovascular disease, blindness, and other disorders that may one day be treatable using stem cell technology. With the advent of induced pluripotent stem (iPS) cells, we may even have a way to overcome the problem of immune rejection. In addition to being a promising—and potentially unlimited—source of cells for regenerative medicine and drug discovery, stem cells serve as an excellent model for studying both normal and abnormal vertebrate development.

The rapid progress and interest in stem cells has led to an avalanche of new knowledge and research tools that span multiple areas of scientific inquiry, ranging from cellular reprogramming to cloning to tissue engineering. Although books on various stem cell topics abound, *Stem Cell Anthology* combines in a single volume a collection of definitive chapters and essential subject matter from five leading stem-cell related volumes, including *Essentials of Stem Cell Biology, Principles of Tissue Engineering, Principles of Regenerative Medicine, Human Stem Cell Manual*, and *Principles of Cloning*.

Stem Cell Anthology successfully integrates this exciting area of biology, combining the prerequisites for a general understanding of adult, embryonic, and induced pluripotent stem cells. No topic in the field of stem cells is left uncovered, including methods for preparing, maintaining, and genetically manipulating stem cells and progenitor populations; the types, properties, and characteristics of stem cells; application of stem cells to specific organ systems and diseases, including neural and pancreatic stem cells; cancer; burns and ulcers, and cardiovascular and musculoskeletal repair; as well as a section on ethical, religious, and FDA product and pre-clinical regulatory considerations. The result is a comprehensive, easy to follow reference by the world's experts that will be useful to students, scientists, and clinicians alike.

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