

# Preface

In the brief history of modern cardiovascular medicine, it has not been uncommon for scientists, researchers and clinicians to join forces in an effort to dramatically change the development and treatment of a specific pathology. The introduction of coronary arteriography, bypass surgery, angioplasty and, now, drug-eluting stents has positively influenced the care of patients suffering from lifestyle-limiting anginal symptoms due to obliterative coronary artery disease. In each of these and many other areas currently under study, the common denominator for success has been the ability to create a specific focal point where every available element of laboratory information is translated into a potential broad clinical application.

The publication of this inaugural text, *Stem Cell Therapy and Tissue Engineering for Cardiovascular Repair: From Basic Research to Clinical Applications*, is highly noteworthy and, more importantly, extremely timely in its focus on a disease of epidemic proportions. Statistics verify that myocardial infarction and congestive heart failure (CHF) are the most prevalent heart conditions not only in the United States (US) but also in other leading developed countries of the world. In US hospitals, myocardial infarction and CHF are the number one diagnoses in cardiovascular units today! This problem will not be solved with conventional procedures or enhancements of interventional devices. The answer will be found only in a better understanding and clinical application of gene, cell and tissue engineering.

The topics in this book, addressed by world-renowned authorities, were selected to cover the spectrum from basic development to clinical application. Pertinent information on cell isolation and expansion, both in animals and humans, is prevalent throughout, providing guidance for the clinical scientist interested in this area. There are detailed explanations of an FDA-accepted animal model for examining various cell lines, which hopefully will create some uniformity in experimental design. Regulatory authorities also discuss required cell manufacturing and pre-clinical pathways to eliminate the pre-clinical frustration of protocol deficiencies based on lack of requisite information and procedural mechanisms. This scenario is brilliantly illustrated in the description of the steps required for FDA approval of percutaneous myoblast transplantation.

The vital contents of this publication verify that which we have observed repeatedly from past experiences—great talent will assemble to conquer a great problem! It is not so much a question of which cell or process will ultimately be successful, but rather when and how it will come to fruition. Our hope is that the material presented here will speed us along that pathway, ultimately reining in yet another cause of human morbidity and mortality.

The Editors



<http://www.springer.com/978-0-387-25788-4>

Stem Cell Therapy and Tissue Engineering for  
Cardiovascular Repair

From Basic Research to Clinical Applications

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2006, XIX, 335 p., Hardcover

ISBN: 978-0-387-25788-4