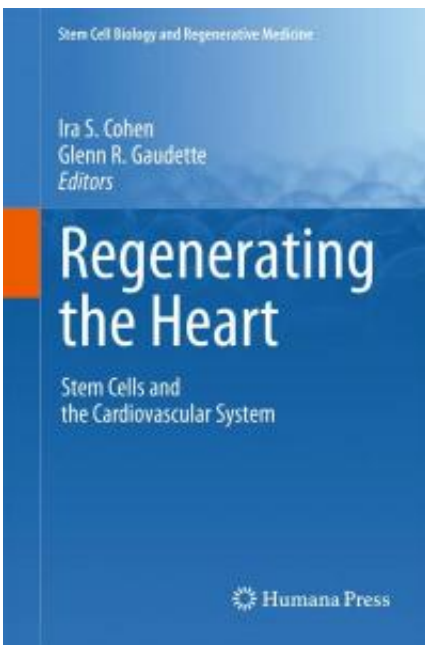


# New book explores stem cell therapies for heart disease

May 17 2011

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This is the cover of "Regenerating the Heart: Stem Cells and the Cardiovascular System," edited by Glenn Gaudette, associate professor of biomedical engineering at Worcester Polytechnic Institute (WPI), and Ira Cohen, professor of physiology and biophysics at Stony Brook (2011, Humana Press). Credit: Humana Press

A new book edited by researchers at Worcester Polytechnic Institute (WPI) and the Stony Brook University School of Medicine provides a comprehensive look at the science and application of cellular therapies aimed at the leading cause of death---heart disease. "Regenerating the

Heart: Stem Cells and the Cardiovascular System" (Humana Press) is edited by Glenn Gaudette, associate professor of biomedical engineering at WPI, and Ira Cohen, professor of physiology and biophysics at Stony Brook.

Recognized leaders in the field, Cohen and Gaudette have collaborated on cardiac regeneration research projects since 2002, when Gaudette was a faculty member at Stony Brook. Last year Humana Press asked the team to develop and edit the new book to serve as a foundational text for the emerging field. "We were fortunate to have leading investigators in this field, from around the world, contribute original material for this book," Gaudette said. "It's a book for clinicians, investigators, and graduate students who want to understand the history of the field, and to see where the science is today across all the major approaches of using stem cells to heal the beating [heart](#)."

According to the U.S. [Centers for Disease Control and Prevention](#) (CDC), heart disease is the leading killer of men and women, accounting for approximately one in four deaths in the United States each year. The CDC also reports that each year approximately 785,000 Americans have a first heart attack, while another 470,000 people who have already had one or more heart attacks have another. It is the magnitude of the potential impact on human health that motivated Gaudette and Cohen to focus on new therapies using stem cells to regenerate cardiac tissues damaged by [heart attack](#) or other diseases. "As we look forward to the twenty-first century, we see the potential of cell therapy to address many cardiovascular diseases," Cohen and Gaudette write in the book's introduction. "From [heart failure](#), to atrioventricular nodal dysfunction (heart arrhythmia), the young but promising field of cell therapy is likely to play a significant role in developing a cure."

Gaudette is an expert on the mechanical aspects of cardiac function. His lab is exploring ways to coax bone marrow-derived stem cells to

regenerate cardiac muscle and improve the heart's ability to pump blood. Cohen, an expert on the electrical signals that regulate heart rhythms, is using bone marrow–derived stem cells to develop an implantable biological pacemaker that could treat cardiac arrhythmias. In addition to editing the book, Cohen and Gaudette contributed chapters based on their own expertise.

The book is organized into four sections: boosting the heart's mechanical function, restoring normal heart rhythms, regenerating specific heart tissues like valves and blood vessels, and the emerging techniques being developed to deliver and assess various stem cells therapies for the heart. It includes chapters from three other WPI faculty members: Tanja Dominko, associate professor of biology and biotechnology, and Raymond Page and Marsha Rolle, assistant professors of biomedical engineering, wrote about work in their labs exploring various elements of tissue regeneration.

"We have learned greatly from the preparation of this text," Gaudette and Cohen write. "We thank the authors for their fine contributions and hope that [this book] contributes to the education of newly committed and veteran [stem cells](#) researchers alike."

**More information:** [www.springer.com/life+sciences ...ok/978-1-61779-020-1](http://www.springer.com/life+sciences...ok/978-1-61779-020-1))

Provided by Worcester Polytechnic Institute

Citation: New book explores stem cell therapies for heart disease (2011, May 17) retrieved 26 April 2024 from <https://medicalxpress.com/news/2011-05-explores-stem-cell-therapies-heart.html>

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