

# Developing Novel Technology for Heart Regeneration



**Charles Murry**

Professor of Pathology, Bioengineering and Cardiology/Medicine; Interim Director, Institute for Stem Cell and Regenerative Medicine; Co-Director, Center for Cardiovascular Biology, University of Washington

## CURRENT RESEARCH

### Using cell-based cardiac regenerative medicine to combat heart disease

Heart disease has a staggering death toll of more than 600,000 people a year. Current treatments for severe forms of cardiac dysfunction is typically organ transplantation, but the demand for donor hearts far exceeds availability, with only about 2,000 patients receiving a heart transplant per year. Dr. Charles Murry, Professor of Pathology, Bioengineering, and Cardiology/Medicine, Interim Director at the Institute for Stem Cell and Regenerative Medicine, and Co-Director at the Center for Cardiovascular Biology at University of Washington, is developing novel technologies that enable the use of cell transplantation as a regenerative therapeutic alternative to combat severe cardiac deterioration. He uses innovative tissue engineering and cell reprogramming technologies to develop platforms that enable the characterization of novel therapeutic agents; cell-based restoration of heart function has moved from an implausible idea to a tangible and promising approach, which has the potential to impact millions of people suffering from heart disease.

A key factor for the success of this innovative therapy is finding a suitable source of human cardiac muscle, which is difficult. Though many cell types have been examined, only pluripotent stem cells are shown to be effective at generating these cells at therapeutically relevant levels. Although pluripotent stem cells have the capacity to become any cell type in the body during the earliest stages of development, they become restricted (in their potential to become other cell types) and functionally specialized when they mature. Some organs, such as the liver, retain a capacity to replenish lost cells and repair itself. The heart, however, cannot. Dr. Murry has...

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## AFFILIATION



University of Washington

## EDUCATION

- M.D. 1988, Duke University School of Medicine
- Ph.D. 1989, Duke University School of Medicine

## AWARDS

- Thompson Award, Northwest Association for Biomedical Research, 2016
- Elected as American Institute for Medical and Biological Engineering Fellow, 2016
- University of North Carolina Marc J. Mass Memorial Lecture, 2014
- UW Presidential Entrepreneurial Faculty Fellow, 2014
- University of Missouri James O. Davis Lecture, 2014
- and 2 more...

## RESEARCH AREAS

Life Science, Cardiovascular, Regenerative Medicine

## FUNDING REQUEST

Your contributions will help fund Dr. Murry's continued research using regenerative therapy to solve heart disease. Costs include research facilities and equipment, continued research for regenerative therapies, sponsored outreach events for underprivileged communities, training for undergraduate students, graduate trainees, and postdoctoral fellows. He is exhilaratingly close to being able to use regenerative therapies to repair the human heart and your donation can help achieve this goal.