NSF NSE Grantees Conference, December 12, 2017
Panel 3

The CELL-MET Nanotechnology Engineering Research Center

David Bishop, Director
Boston University
Boston, MA 02215

Heart disease is the number one cause of death in the US and a leading cause worldwide, but current medicine cannot regenerate diseased human heart tissue. Today, there is no cure for a heart attack. The vision of CELL-MET is to change this. CELL-MET will develop tissue-engineering principles to create scalable, low-cost technologies for growing clinically significant cardiac tissues from cell-level building blocks. The research will adapt and advance novel nanomanufacturing techniques to integrate a variety of functional biological structures and elements into flexible polymer scaffolds that support and guide heart cells. Our goal is to create cardiac patches that will someday allow for the repair of hearts damaged by a heart attack or other diseases.

In addition to their potential for repairing damaged hearts, artificial cardiac tissues will be used to test the effects of heart drugs or other drugs more realistically and efficiently than is currently possible. Broader impacts will include kindergarten-postdoc education and training programs that will produce a diverse, well-trained, world aware workforce to support the new, billion dollar industries enabled by CELL-MET research. Industrial partners will work with CELL-MET to create these new industries, developing the business opportunities generated by the research breakthroughs.