

# 4<sup>th</sup> International Conference on Tissue Science and Regenerative Medicine

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## Vascularized cardiac tissue from induced pluripotent-derived cardiomyocytes and endothelial cells

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According to the American heart association, myocardial infarctions (MI) occurs once every forty-four seconds in the United States. The chronic conditions that can develop from the damaged tissue require the use of daily medications, pacemakers and or organ replacement in order to prevent congestive heart failure. Cardiovascular tissue engineering holds promising solutions to replace the need for whole heart transplants and has made substantial progress towards repairing heart function after a MI. However, key challenges facing tissue engineering are the source, the packaging/delivery of cardiomyocytes (CM) in a manner that enables both cell survival and host integration and vascularization of the new tissue. Our laboratory has developed a number of cell differentiation methods and engineering strategies addressing these key challenges in building functional heart tissue *in vitro*.

### Biography

Kara E. McCloskey, PhD, is a Founding Associate Professor in the School of Engineering at the University of California, Merced. She received her BS and an MS in Chemical Engineering from The Ohio State University and her PhD through a joint program with Cleveland Clinic Foundation's Biomedical Engineering Department and Ohio State University. She then completed her postdoctoral training in vascular stem cell and tissue engineering with Robert Nerem at the Georgia Institute of Technology. McCloskey is the founder and first chair of the Biological Engineering and Small-scale Technologies (BEST) graduate program at UC, Merced and serves as the university liaison for the UC Systemwide Bioengineering Multicampus Research Unit. Her research is in the field of cardiovascular tissue engineering with a specific focus on deriving functional cell products from stem cells. As a young investigator McCloskey earned a highly competitive \$1.7 million New Faculty Award from the California Institute for Regenerative Medicine (CIRM) for studies towards developing cardiac tissue from stem cells, and another recent CIRM-funded Basic Biology award on directing specialized endothelial cell from stem cells. Kara McCloskey has over 14 years of experience in the area of endothelial cell (EC) fate from both human and mouse embryonic stem cells (ESC), and 9 years in cardiac fate, and now serves on the editorial board for the International Journal of Stem Cell Research & Therapy.

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