Robert J Schwartz, Curr Synthetic Sys Biol 2015, 3:3
http://dx.doi.org/10.4172/2332-0737.C1.002

OMICS International
conferenceseries.com

International Conference on
Synthetic Biology

September 28-29, 2015 Houston, USA

Conversion of adipogenic mesenchymal stem cells into mature cardiac myocytes

Robert J Schwartz
University of Houston, USA

ETS2 and MESP1 first used to convert human foreskin fibroblasts also, converted human adipogenicmesenchymal stem cell (hADMSCs) into cardiac progenitors (CPCs). These factors up regulated cardiac mesoderm cell surface markers, such as KDR, PDGFRa, and CXCR4 and a cadre of cardiac regulatory factors, but without the appearance of many calcium handling proteins. We then explored the role of 3D cardio-spheroids formed in a rotating Synthecon bioreactor that mimics microgravity on earth. Without the addition of any other reagent or drug we observed the robust induction of adult myosin heavy chains, contractile sarcomeres, ion channels, calcium handlingchannels and pumps in 3D cardio-spheres. We began to decode the gene expression network of ion channels, SR and t-tubules genes using cutting edge genetic informatics on the ground experiment and found that hypoxic signaling likely coordinates the appearance of many genes involved with calcium handling and myocyte maturation. Our experimental paradigm contributes to a novel regenerative strategy that enhanced myocyte maturation from converted human mesenchymal stem cells.

Biography

Robert J. Schwartz, PhD is a Professor in the Department of Biology and Biochemistry and the Director of the Center for Molecular Medicine and Experimental Therapeutic. He previously was at Baylor College of Medicine in Houston, where he served as a tenured professor in the Departments of Cell Biology, Molecular and Cellular Biology, Medicine, and Molecular Physiology. He also was co-director of the Baylor College of Medicine Center for Cardiovascular Development. Schwartz also spent five years at the Institute of Biosciences and Technology where he was the Director of the Institute. During his more than thirty five years in Houston, Schwartz became widely recognized for his research on the developmental and genetic aspects of congenital heart disease. In this field he has received eleven US patents and co-founded three companies. He earned his B.S. from Brooklyn College and his PhD in Biology from the University of Pennsylvania.

rjschwartz@uh.edu

Notes: