Transplantation of human induced pluripotent stem cells (hiPSC) derived cells, cell products, and engineered functional myocardial tissue constructs for cardiac repair has emerged as an exciting treatment option for myocardial infarction and heart failure. Beneficial effects could be due to direct remuscularization or paracrine mechanisms leading to activation of endogenous myocyte proliferation machinery with subsequent promotion of neovascularization, remuscularization and consequently prevention of postinfarction LV remodeling and dilatation. This presentation will discuss the major roadblocks in cardiac remuscularization, the potential approaches to overcome these problems and how to make the cell products become the treatment options in the future.

Professor Zhang is an international leader in myocardial bioenergetics, biomaterials, and pluripotent stem cells for cardiac repair. He is tenured Professor of Medicine and of Engineering; T. Michael and Gillian Goodrich Endowed Chair of Engineering Leadership; and the Chairman of the Department of Biomedical Engineering (BME), a joint department of the School of Medicine and School of Engineering, at the University of Alabama at Birmingham (UAB). He came to UAB in October 2015 after he was chosen in a national search to lead the UAB BME department from the University of Minnesota Medical School, where he was the Engdahl Family Foundation Chair in Cardiovascular Regenerative Therapies, in addition to being a tenured professor of medicine, of biomedical engineering, of electrical engineering, and computer engineering. Among his recent honours and awards is the prestigious George E. Brown Memorial Lectureship for the 2014 AHA Scientific Sessions. He is also the recipient of an Established Investigator Award from the American Heart Association (1996) and a First Award from the National Institutes of Health (1993).