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Mapping cardiac progenitor cell fate via the mitochondria

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Studies have documented that the adult heart contains a pool of CPCs that are clonogenic, self-renewing and multipotent. These cells are thought to exist in the heart to facilitate growth during adolescence and to provide a mechanism for minor repair and ongoing cell turnover within the adult heart. The CPCs have been shown to have therapeutic potential. To be effective in repairing the heart, the infused CPCs must successfully engraft, proliferate and differentiate into cells of the cardiac lineages. Although many studies have begun to investigate the signaling mechanisms involved in these processes, there are still significant gaps in our knowledge regarding the differentiation process of CPCs. Most importantly, little or no attention has been given to the alterations in mitochondria and redox status during differentiation of the CPCs. To transition from a non-contracting progenitor cell requiring little energy to a beating cardiac myocyte requires development of an energetic infrastructure that is capable of supporting the high metabolic demands of the myocyte. Thus, when a CPC commits to a myocyte lineage it must undergo substantial expansion, reprogramming and reorganization of its mitochondria, but how these processes are regulated in CPCs are currently unknown. This talk will shed light into the processes regulating mitochondrial maturation in CPCs during differentiation.

Biography

Sang-Bing Ong has completed his PhD at University College London, UK in the year 2010. He has then completed his Postdoctoral studies at University of California, USA in 2012. He has worked as an Adjunct Lecturer in Biomedical Engineering in Universiti Teknologi Malaysia till 2015. Currently he is working as an Assistant Professor under Cardiovascular and Metabolic Diseases Program in Duke-NUS Medical School, Singapore.

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