



Realization of human cardiomyocyte proliferation – A key for cardiac regeneration -

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The heart of human is postulated to be a non-regenerative organ, although hearts of zebrafish or neonatal mouse within 1 week after birth can regenerate after injury. Due to the above facts, proliferative ability of cardiomyocytes is now considered to be a determinant factor for cardiac regeneration, and elucidating and manipulating the machinery that regulates human cardiomyocytes would be an important key to realizing human cardiomyocyte proliferation. We have already succeeded in inducing cardiomyocytes from human pluripotent stem cells and inducing their proliferation to some degree with small molecules. In this project, we will analyze the human cardiomyocyte proliferation process with single cell analysis comparing global gene expression between proliferating and non-proliferating cardiomyocytes. Through this analysis, we hope to elucidate the regulatory mechanisms for human cardiomyocyte proliferation and realize a future that views the human heart as a regenerative organ.

■ URL https://www.cira.kyoto-u.ac.jp/j/research/yamashita_summary.html

