

Abstract

METHODS AND COMPOSITIONS FOR GENERATING EPICARDIUM CELLS

Provided are methods and products for obtaining cardiovascular lineage cells from hPSCs. The method for obtaining a cardiomyocyte lineage or an epicardial lineage cell population from human pluripotent stem cells (hPSCs) comprises one or more of the following steps: (a) contacting BMP component primed hPSCs with a cardiovascular mesoderm programming cocktail suitable for inducing the hPSCs to differentiate to a cardiovascular mesoderm cell population under conditions suitable for the programming cocktail to penetrate the hPSCs and culturing the contacted hPSCs for a period of time to generate a KDR⁺ and PDGFR α ⁺ cardiovascular mesoderm cell population; (b) contacting the cardiovascular mesoderm cell population with a cardiovascular progenitor specification cocktail suitable to specify a NKX2-5⁺ or WT1⁺ cardiovascular progenitor cell population under conditions suitable for the specification cocktail to penetrate the cardiovascular mesoderm cell population and culturing the contacted cardiovascular mesoderm cell population for a period of time to generate a NKX2-5⁺ or WT1⁺ cardiovascular progenitor cell population; and (d) contacting the cardiovascular progenitor cell population with a maturation cocktail under conditions suitable for the maturation cocktail to penetrate the cardiovascular progenitor cell population and culturing the contacted cardiovascular progenitor population for a period of time to produce a cardiovascular population optionally cardiomyocyte lineage cells expressing cardiac troponin T (cTnT) and/or SIRPA and/or epicardial lineage cells expressing WT1.

[Figure 18]