

**Figure S1.** Summary of the single-cell sequencing output data of different sample groups. (A) the sample collected on day 0; (B) the sample collected on day 2; (C) the samples collected on day 4; (D) the samples collected on day 10.



**Figure S2.** Cell morphology and alkaline phosphatase staining of the two iPSC lines. (A) Cell morphology of cell line 1 in bright fields of microscope; (B) cell line 1 showed strong expression of alkaline phosphatase; (C) Cell morphology of cell line 2 in bright fields of microscope; (D) cell line 2 showed strong expression of alkaline phosphatase.



**Figure S3.** Subpopulations of the cell in cardiac differentiation. (A) t-SNE displaying the four clusters of cells collected at the four differentiation time points in cardiac differentiation; (B) t-SNE displaying the cells colored by UMI counts; (C) optimal partitioning of human iPSC-derived cells using k-means with k=5 clusters via the sum of the squared errors as determined above; (D) t-SNE displaying the five clusters of cells partitioning k-means (k=5).

**Table S1:** The stage-specific genes emerged in the cardiac differentiation.

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