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Titel des Beitrags: Postnatal isl1+ cardioblasts enter fully differentiated cardiomyocyte lineages.

Abstract: The purification, renewal and differentiation of native cardiac progenitors would form a mechanistic underpinning for unravelling steps for cardiac cell lineage formation, and their links to forms of congenital and adult cardiac diseases. Until now there has been little evidence for native cardiac precursor cells in the postnatal heart. Herein, we report the identification of isl1+ cardiac progenitors in postnatal rat, mouse and human myocardium. A cardiac mesenchymal feeder layer allows renewal of the isolated progenitor cells with maintenance of their capability to adopt a fully differentiated cardiomyocyte phenotype. Tamoxifen-inducible Cre/lox technology enables selective marking of this progenitor cell population including its progeny, at a defined time, and purification to relative homogeneity. Co-culture studies with neonatal myocytes indicate that isl1+ cells represent authentic, endogenous cardiac progenitors (cardioblasts) that display highly efficient conversion to a mature cardiac phenotype with stable expression of myocytic markers (25%) in the absence of cell fusion, intact Ca2+-cycling, and the generation of action potentials. The discovery of native cardioblasts represents a genetically based system to identify steps in cardiac cell lineage formation and maturation in development and disease.

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