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(54) Title: IMPROVED CARDIOMYOCYTE DIFFERENTIATION

(57) Abstract: The present invention provides a method of enhancing the efficiency of differentiation of hES cells into cardiomyocytes which method comprises incubating the cells under serem free conditions. The method typically includes providing cells that induce cardiomyocyte differentiation by cell to cell contact. Differentiation to cardiomyocytes can occur via two routes, namely by spontaneous differentiation and by induced differentiation. Without wishing to be bound by theory, the present inventors hypthesise that, in the case of induced differentiation, END-2 cells, for instance, are needed for aggregation to cause local high cell densities and in inducing differentation of nascent mesodern. This second step could be enhanced in any human embryonic stem cell line leading to the prediction that it will work in lines other than hES. In cell lines that undergo sponantaneous differentiation, it is hypothesised that local induction of embryoid bodies in edoderm occurs. Typically for induced differentiation this method will also comprise culturing the hES cell with a cell excreting at least one cardiomyocyte differentiation inducing factor or with an extracellular medium therefrom, under conditions that induce differentiation.