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(54) Title: CHEMICAL REPROGRAMMING OF HUMAN SOMATIC CELLS INTO PLURIPOTENT CELLS

(57) Abstract: Compositions of culture conditions and the stepwise method for improving reprogramming of human somatic cells into human chemically induced pluripotent cells are disclosed. The first stage, which uses a combination of small molecules with necessary biological activities, is aimed at downregulating the somatic gene program. The second stage uses a selection of small molecules with select biological activities to upregulate one or more pluripotency-related transcriptional factors. The third stage uses a selection of small molecule factors with select biological activities to establish an initial pluripotency network, measured by the expression of OCT4. The fourth and final stage uses a selection of small molecules with select biological activities to fully establish a pluripotent network, measured by co-expression factors such as OCT4, SOX2, and NANOG in the reprogrammed cells. The resultant reprogrammed cells are termed human chemically induced pluripotent stem cells, hCiPSCs.