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(54) Title: *IN VITRO* DIFFERENTIATION OF PLURIPOTENT STEM CELLS TO PANCREATIC ENDODERM CELLS (PEC) AND ENDOCRINE CELLS

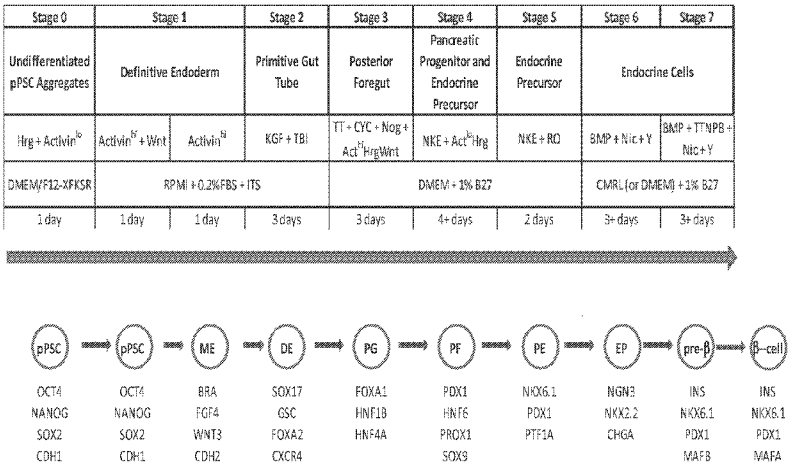


FIG. 45

(57) Abstract: A human immature endocrine cell population and methods for making an immature endocrine cell population are provided. Specifically, immature beta cells and methods for production of immature beta cells are described. Immature beta cells co-express INS and NKX6.1 and are uni-potent and thereby develop into mature beta cells when implanted *in vivo*. The mature beta cells *in vivo* are capable of producing insulin in response to glucose stimulation.

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