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(54) Title: *IN VITRO* HEPATIC DIFFERENTIATION

(57) Abstract: This invention relates to the induction of hepatic differentiation by culturing induced pluripotent stem (iPS) cells in an endoderm induction medium to produce a population of anterior definitive endoderm (ADE) cells and then culturing the population of ADE cells in a hepatic induction medium to produce a population of hepatic progenitor cells, which may be optionally differentiated into hepatocytes. The endoderm induction medium is a chemically defined medium which has fibroblast growth factor activity, stimulates SMAD2 and SMAD3 mediated signalling pathways and SMAD1, SMAD5 and SMAD9 mediated signalling pathways, and inhibits phosphatidylinositol 3-kinase (PI3K) and glycogen synthase kinase 3β (GSK3β); and the hepatic induction medium is a chemically defined medium which stimulates SMAD2 and SMAD3 mediated signalling pathways. These methods may be useful, for example, in producing hepatocytes and hepatic progenitor cells for cell-based therapies or disease modelling.