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(54) Title: NOVEL METHODS AND CULTURE MEDIA FOR CULTURING PLURIPOTENT STEM CELLS

(57) Abstract: Provided is an isolated population of human pluripotent stem cells comprising at least 50% human pluripotent stem cells characterized by an $OCT4^{+}$/TRA1-60-/TRA1-81-/$SSEA1^{+}$/$SSEA4^{-}$ expression signature, and novel methods of generating and maintaining same in a pluripotent, undifferentiated state a suspension culture devoid of cell clumps. Also provided are novel culture media for culturing pluripotent stem cells such as embryonic stem cells and induced pluripotent stem cells in a suspension culture or a two-dimensional culture system while maintaining the cells in a proliferative, pluripotent and undifferentiated state. The novel culture media comprise interleukin 11 (IL11) and Ciliay Neurotrophic Factor (CNTF); bFGF at a concentration of at least 50 ng/ml and an IL6RIL6 chimera; or an animal contaminant-free serum replacement and an IL6RIL6 chimera. Also provided are cell cultures comprising the pluripotent stem cells and the culture media and methods of using same for expanding and maintaining pluripotent stem cells in an undifferentiated state, or for generating lineage-specific cells from the pluripotent stem cells.