MORTAL PLURIPOTENT STEM CELLS

CROSS-REFERENCE

[0001] This application claims the benefit of U.S. Provisional Application No. 63/020,247, filed May 5, 2020, which application is incorporated herein by reference in its entirety.

BACKGROUND

[0002] There exists a need for novel stem cells for treating various diseases or conditions, as an alternative to overcome certain shortcomings of existing embryonic stem cells and iPS cells.

INCORPORATION BY REFERENCE

[0003] All publications, patents, and patent applications herein are incorporated by reference to the same extent as if each individual publication, patent, or patent application was specifically and individually indicated to be incorporated by reference. In the event of a conflict between a term herein and a term in an incorporated reference, the term herein controls.

~~BRIEF~~ SUMMARY

[0004] The inventive embodiments provided in this Brief Summary of the Invention are meant to be illustrative only and to provide an overview of selective embodiments disclosed herein. The Brief Summary of the Invention, being illustrative and selective, does not limit the scope of any claim, does not provide the entire scope of inventive embodiments disclosed or contemplated herein, and should not be construed as limiting or constraining the scope of this disclosure or any claimed inventive embodiment.

[0004a] In one aspect, disclosed herein is a population of mortal pluripotent stem cells (MPSCs), wherein the population of MPSCs express HLA-G and insulin, and wherein the population of MPSCs is capable of reaching at least 89 population doublings within about 90 days from a start of culturing the MPSCs.

[0004b] In another aspect, disclosed herein is an *in vitro* method of growing a population of mortal pluripotent stem cells (MPSCs) disclosed herein, comprising seeding a subculture of the MPSCs at a density of from 1,000 to 5,000 cells/cm^2 in a culture medium, and culturing the cells, wherein the population of MPSCs express a HLA-G and insulin.

[0004c] In another aspect, disclosed herein is a use of the population of MPSCs disclosed herein in the manufacture of a medicament for the treatment of a motor neuron disease, a spinal cord injury, a pancreatic injury, or a disease or disorder caused by a pancreatic injury in a subject in need thereof.

[0004d] In another aspect, disclosed herein is the population of MPSCs disclosed herein, the

neural stem cells (NSCs) produced by the method disclosed herein, a composition comprising the neural stem cells (NSCs) produced by the method disclosed herein, the pancreatic progenitor cells (PPCs) produced by the method disclosed herein, or a composition comprising the pancreatic progenitor cells (PPCs) produced by the method disclosed herein for use in therapy.

[0004e] In another aspect, disclosed herein is a use of the neural stem cells (NSCs) produced by the method disclosed herein in the manufacture of a medicament for the treatment of a motor neuron disease or a spinal cord injury.

[0004f] In another aspect, disclosed herein is a use of a composition comprising the neural stem cells (NSCs) produced by the method disclosed herein in the manufacture of a medicament for the treatment of a motor neuron disease or a spinal cord injury.

[0004g] In another aspect, disclosed herein is a use of the pancreatic progenitor cells (PPCs) produced by the method disclosed herein in the manufacture of a medicament for the treatment of a pancreatic injury or a disease or disorder caused by a pancreatic injury.

[0004h] In another aspect, disclosed herein is a use of a composition comprising the pancreatic progenitor cells (PPCs) produced by the method disclosed herein in the manufacture of a medicament for the treatment of a pancreatic injury or a disease or disorder caused by a pancreatic injury.

[0005] In some of many aspects, disclosed herein is a population of mortal pluripotent stem cells (MPSCs), wherein the population of MPSCs express HLA-G and insulin, and wherein the population of MPSCs are capable of reaching up to at least 89 population doublings within 90 days from a start of culturing the MPSCs. In some instances, the population of MPSCs are capable of reaching from about 89 to about 100 population doublings within 90 days from a start of culturing the MPSCs. In some instances, the population of MPSCs are capable of reaching from about 25 to about 30 population doublings within about 12 days, from about 50 to about 55 population doublings within about 30 days, and/or from about 75 to about 80 population doublings within about 63 days, from a start of culturing the MPSCs. In some instances, the population of MPSCs are capable of doubling in from about 22 to about 27 hours, for example about 25 hours. In some aspects, disclosed herein is a population of mortal pluripotent stem cells (MPSCs), wherein the population of MPSCs express HLA-G and insulin, and wherein the population of MPSCs are free from a pathogen.