

CLAIMS

WHAT IS CLAIMED IS:

1. 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.
2. The population of MPSCs of claim 1, wherein 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.
3. The population of MPSCs of claim 1 or 2, that are capable of doubling in about 25 hours or from about 22 to about 27 hours.
4. The population of MPSCs of any preceding claim, wherein the population of MPSCs expresses HLA-G and insulin, and wherein the population of MPSCs are free from a pathogen.
5. The population of MPSCs of claim 4, wherein the pathogen is a bacterium, a virus, or a cytomegalovirus.
6. The population of MPSCs of claim 4 or 5, wherein the pathogen is an EBV (Epstein-Barr virus), a human adenovirus (HAdV), a human cytomegalovirus (HCMV), a Hepatitis virus, a human immunodeficiency virus (HIV), a human papillomavirus (HPV), a Herpes Simplex Virus (HSV), a human T-lymphotropic virus (HTLV), a varicella virus (VZV), a *Corynebacterium*, a Hantavirus, a lymphocytic choriomeningitis virus (LCMV), a *Mycoplasma*, a *Treponema*, or any combination thereof.
7. The population of MPSCs of claim 5 or 6, wherein the pathogen is a virus and the virus is one or more of:
 - a. a Hepatitis virus, wherein the Hepatitis virus comprises Hepatitis A, Hepatitis B, Hepatitis C, or a combination thereof;
 - b. a Herpes Simplex Virus (HSV), wherein the Herpes Simplex Virus (HSV) comprises a human herpes virus 6 (HHV 6), a human herpes virus 8 (HHV 8), Herpes Simplex Virus (HSV 1), a Herpes Simplex Virus (HSV 2), or a combination thereof;
 - c. a human immunodeficiency virus, wherein the human immunodeficiency virus comprises a human immunodeficiency virus 1 (HIV1), a human immunodeficiency virus 2 (HIV2), or a combination thereof;
 - d. a human papillomavirus, wherein the human papillomavirus comprises HPV16,

- HPV18, or a combination thereof;
- e. a human T-lymphotropic virus, wherein the human T-lymphotropic virus comprises a human T-lymphotropic virus (HTLV 1), a human T-lymphotropic virus (HTLV 2), or a combination thereof; or
 - f. a Hantavirus, and wherein the Hantavirus comprises a Hantaan Hantavirus, a Seoul Hantavirus, a Sin Nombre Hantavirus, or a combination thereof.
8. The population of MPSCs of claim 6, wherein the MPSCs are free from the *Corynebacterium*, and wherein the *Corynebacterium* comprises *Corynebacterium bovis*, *Corynebacterium sp.* (HAC2), or a combination thereof.
9. The population of MPSCs of any preceding claim, wherein the population of the MPSCs further express one or more proteins of:
- a. b-HCG, HSP90, CDX2, HLA-A, HLA-B, HLA-C, or any combination thereof;
or
 - b. KIR2DL4, Flt3L, NKp46, TCR, ILT-4, CD49f, CD8, CD10, CD11b, CD16, CD38, CD44, CD56, CD90/Thy-1, CD105, CD141, CD146, CD166, CD107a, or any combination thereof.
10. The population of MPSCs of any preceding claim, wherein at least some of the MPSCs do not express one or more proteins of (a) Ki-67, HSP70, p53, Syncytin, or a combination thereof; or (b) CD19, CD45, HLA-DR, or a combination thereof.
11. The population of MPSCs of any preceding claim, wherein the population of the MPSCs express one or more proteins of CD44, CD90, CD105, CD146, CD166, HLA-A, HLA-B, HLA-C, or a combination thereof.
12. The population of MPSCs of any preceding claim, wherein more than 96% of the MPSCs do not express one or more of (a) CD19, CD45, HLA-DR, or a combination thereof, or (b) do not express CD3.
13. The population of MPSCs of any preceding claim, wherein at least 65% of the population of the MPSCs express a HLA-G, wherein the HLA-G comprises HLA-G1, HLA-G2, HLA-G3, HLA-G4, HLA-G5, HLA-G6, HLA-G7, or any combination thereof.
14. The population of MPSCs of any one of claims 1-13, wherein less than 15% of the population of the MPSCs express HLA-G1.
15. The population of MPSCs of any preceding claim, that comprises at least 1×10^6 MPSCs.
16. The population of MPSCs of any preceding claim, wherein the MPSCs exhibit one or more of:

- a. a stable karyotype as measured by an array-based whole-genome assay;
- b. no chromosomal aberration from population doublings as measured by an array-based whole-genome assay; or
- c. no substantial chromosomal aberration from freezing and thawing, as measured by an array-based whole-genome assay.

17. An *in vitro* method of growing a population of mortal pluripotent stem cells (MPSCs) of any one of claims 1-16, comprising seeding a subculture of the MPSCs at a density of from 1,000 to 5,000 cells/cm² in a culture medium, and culturing the cells, wherein the population of MPSCs express a HLA-G and insulin.

18. The method of claim 17, wherein the culture medium is free from an animal component, a serum, or a fetal bovine serum.

19. The method of claim 17 or 18, wherein the MPSCs are cultured for about 3 or 4 days.

20. The method of any one of claims 17-19, further comprising contacting the population of MPSCs with one or more inducing agents, whereby a population of produced cells are obtained by the method.

21. The method of claim 20, wherein the produced cells are ectodermal cells, mesodermal cells, endodermal cells, pancreatic cells, pancreatic progenitor cells (PPCs), neural cells (NCS), neural progenitor cells, hepatic cells, hepatic progenitor cells, natural killer cells, adipocytes, chondrocytes, or osteocytes.

22. The method of claim 21, wherein the produced cells are the neural cells (NCS) or the neural progenitor cells.

23. The method of claim 21, wherein the produced cells are the pancreatic cells or the pancreatic progenitor cells (PPCs).

24. The method of claim 20, wherein the one or more inducing agents comprise (a) bFGF (basic fibroblast growth factor); (b) 2-mercaptoethanol and nicotinamide; (c) retinoic acid, (d) fibroblast growth factor (FGF), a steroid, or a cytokine; or (e) FGF.

25. Use of the population of MPSCs of any one of claims 1-16 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.

26. The population of MPSCs of any one of claims 1-16, the neural stem cells (NSCs) produced by the method of claim 22, a composition comprising the neural stem cells (NSCs) produced by the method of claim 22, the pancreatic progenitor cells (PPCs) produced by the method of claim 23, or a composition comprising the pancreatic progenitor cells (PPCs)

produced by the method of claim 23 for use in therapy.

27. Use of the neural stem cells (NSCs) produced by the method of claim 22 in the manufacture of a medicament for the treatment of a motor neuron disease or a spinal cord injury.

28. Use of a composition comprising the neural stem cells (NSCs) produced by the method of claim 22 in the manufacture of a medicament for the treatment of a motor neuron disease or a spinal cord injury.

29. Use of the pancreatic progenitor cells (PPCs) produced by the method of claim 23 in the manufacture of a medicament for the treatment of a pancreatic injury or a disease or disorder caused by a pancreatic injury.

30. Use of a composition comprising the pancreatic progenitor cells (PPCs) produced by the method of claim 23 in the manufacture of a medicament for the treatment of a pancreatic injury or a disease or disorder caused by a pancreatic injury.