CLAIMS

1. A method for producing a mesenchymal stem cell (MSC), the method comprising:

(a) culturing a primitive mesodermal cell with mesenchymoangioblast (MCA) potential that has a $^{EMH}lin^{-}KDR^{+}APLNR^{+}PDGFRalpha^{+}$ phenotype in a mesenchymal-colony forming medium (M-CFM) comprising LiCl and FGF2, but excluding PDGF, under normoxic conditions for sufficient time for a mesenchymal colony to form; and

(b) culturing the mesenchymal colony of (a) adherently to produce the MSC,

wherein the MSC of (b) has superior T-cell immunosuppressive properties comprising a capacity of the MSC to produce a greater magnitude of suppression of proliferation of T helper ($CD4^{+}$) lymphocytes, optionally determined using an ImmunoPotency Assay, relative to a reference MSC produced in a M-CFM comprising LiCl, FGF2, and PDGF.

2. The method of claim 1, wherein sufficient time for the mesenchymal colony to form is about 8 days to about 14 days, about 10 days to about 14 days, about 11 to about 13 days, or about 12 days.

3. The method of claim 1 or claim 2, wherein the T-cell immunosuppressive properties of the MSC are determined relative to the reference MSC produced by a method comprising:

(a') culturing a primitive mesodermal cell under normoxic conditions for sufficient time for a mesenchymal colony to form; and

(b') culturing the mesenchymal colony of (a') adherently to produce the reference MSC.

4. The method of any one of claims 1 to 3, wherein the T-cell immunosuppressive properties of the MSC are determined relative to the reference MSC produced from a primitive mesodermal cell differentiated from a PSC in a differentiation medium comprising FGF2, BMP4, Activin A, and LiCl under hypoxic conditions for about two days.

5. The method of any one of claims 1 to 4, wherein the M-CFM comprises about 1 mM LiCl.

6. The method of any one of claims 1 to 5, wherein the M-CFM comprises about 5 ng/mL to about 100 ng/mL FGF2, or about 10 ng/mL to about 50 ng/mL FGF2, about 10 ng/mL FGF2, or about 20 ng/mL.

7. The method of any one of claims 1 to 6, wherein the M-CFM comprises about 1 mM LiCl and about 10 ng/mL FGF2, or about 1 mM LiCl and about 20 ng/mL FGF2.

8. The method of any one of claims 1 to 7, further comprising, prior to culturing the primitive mesodermal cell, differentiating a pluripotent stem cell (PSC) into a primitive mesodermal cell comprising:

culturing the PSC in a differentiation medium comprising FGF2, BMP4, Activin A, and LiCl under hypoxic conditions for about two days to form the primitive mesoderm; and

replacing the differentiation medium with the M-CFM comprising LiCl and FGF2, but excluding PDGF.

9. The method of any one of claims 1 to 8, wherein the cells are human.

10. The method of claim 8 or claim 9, wherein the PSC is an induced PSC (iPSC).

11. The method of any one of claims 8 to 10, wherein the differentiation medium comprises:

about 10 ng/mL to about 50 ng/mL FGF2, or about 50 ng/mL FGF2;

about 50 ng/mL to about 250 ng/mL BMP4, or about 50 ng/mL BMP4;

about 1 ng/mL to about 15 ng/mL Activin A, about 10 ng/mL to about 15 ng/mL Activin A, about 12.5 ng/mL Activin A, or about 1.5 ng/mL Activin A; and/or

about 1 mM to about 2 mM LiCl.

12. The method of any one of claims 8 to 11, wherein the differentiation medium comprises:

about 50 ng/mL FGF2;

about 50 ng/mL BMP4;

about 1.5 ng/mL Activin A; and

about 2 mM LiCl.

13. The method of any one of claims 1 to 12, comprising culturing on collagen IV and/or tenascin C.

14. The method of any one of claims 1 to 13, further comprising passaging the mesenchymal colony and/or MSC.

15. The method of claim 14, wherein passaging comprises:

culturing the mesenchymal colony and/or MSC for about 3 days;

culturing the mesenchymal colony and/or MSC on fibronectin and/or collagen I; and/or

1, 2, 3, 4, 5, or 6 passages.