CLAIMS

We claim:

1. A composition comprising E4ORF1+ endothelial cells (ECs) at a density of from about 50 million cells per ml to about 150 million cells per ml in a freezing medium comprising an effective amount of a cryopreservative.

2. The composition of claim 1, wherein the ECs are human umbilical vein endothelial cells (HUVECs).

3. The composition of claim 1 or claim 2, wherein the endothelial cells (ECs) are at a density of from about 75 million cells per ml to about 125 million cells per ml.

4. The composition of claim 1 or claim 2, wherein the endothelial cells (ECs) are at a density of about 100 million cells per ml.

5. The composition of any of the preceding claims further comprising human serum albumin (HSA).

6. The composition of any of the preceding claims further comprising about 10% human serum albumin (HSA).

7. The composition of any of the preceding claims wherein the cryopreservative is selected from the group consisting of dimethyl sulfoxide, ethylene glycol, propylene glycol, and glycerol.

8. The composition of any of the preceding claims wherein the cryopreservative is dimethyl sulfoxide.

9. The composition of any of the preceding claims comprising from about 5% to about 10% dimethyl sulfoxide.

10. The composition of any of the preceding claims comprising about 10% dimethyl sulfoxide.

~~11. The composition of any of the preceding claims wherein the freezing medium comprises an endothelial growth medium.~~

~~12. The composition of any of the preceding claims, wherein the ECs comprise a recombinant nucleotide sequence that encodes an adenovirus E4ORF1 protein operatively linked to a heterologous promoter.~~

~~13. The composition of claim 12, wherein the nucleotide sequence is within a vector.~~

~~14. The composition of claim 13, wherein the vector is a retroviral vector.~~

~~15. The composition of claim 14, wherein the retroviral vector is a lentiviral vector.~~

~~16. The composition of claim 15, wherein the retroviral vector is a Maloney murine leukemia virus (MMLV) vector.~~

~~17. The composition of any of the preceding claims, wherein the E4ORF1 is human adenovirus type 5 E4ORF1.~~

~~18. The composition of any of the preceding claims, wherein the ECs do not comprise an entire adenovirus E4 region.~~

~~19. The composition of any of the preceding claims, wherein the ECs do not comprise do not comprise an E4ORF2, E4ORF3, E4ORF4, E4ORF5 or E4ORF6 coding sequence or amino acid sequence.~~

~~20.~~11. ~~A composition~~ The composition of any of the preceding claims comprising (a) E4ORF1+ ECs at a density of about 100 million cells per ml, (b) endothelial growth media, (c) about 5 to about 10% DMSO, and (d) about 10% HSA.

~~21.~~12. ~~A composition~~ The composition of any of the preceding claims comprising (a) E4ORF1+ HUVECs at a density of about 100 million cells per ml, (b) endothelial growth media, (c) about 5 to about 10% DMSO, and (d) about 10% HSA.

~~22. A composition according to any of the preceding claims, further comprising hematopoietic stem cells or hematopoietic progenitor cells.~~

~~23. The composition of claim 22, wherein the hematopoietic stem cells or hematopoietic progenitor cells are from bone marrow.~~

~~24. The composition of claim 22, wherein the hematopoietic stem cells or hematopoietic progenitor cells are from peripheral blood.~~

~~25. The composition of claim 22, wherein the hematopoietic stem cells or hematopoietic progenitor cells are from amniotic fluid.~~

~~26. The composition of claim 22, wherein the hematopoietic stem cells or hematopoietic progenitor cells are from umbilical cord blood.~~

~~27. The composition of any of the preceding claims wherein the composition is in a freezing container.~~

~~28.~~13. The composition of any of the preceding claims ~~claim 27~~, wherein the composition is in ~~freezing container is~~ a cryovial.

~~29.~~14. The composition of ~~claim 27~~ any of the preceding claims, wherein the ~~freezing container is~~ composition is in a cryobag.

~~30.~~15. The composition of ~~claim 27~~any of the preceding claims, wherein the composition is in a freezing container ~~is~~ adapted for aseptic transfer of its contents to a patient in a closed system.

~~31.~~16. A composition according to any of the preceding claims for use in therapy ~~the preparation of a therapeutic composition for administration to a human subject~~.

~~32. Use of a composition according to any of the preceding claims in the preparation of a therapeutic composition for administration to a human subject.~~

~~33. A method of preparing a therapeutic composition for administration to a human subject, the method comprising diluting a composition according to any of the preceding claims with a physiological saline solution, wherein the EC cell concentration after dilution is~~

~~from about 3 million cells per ml to about 5 million cells per ml, thereby preparing a therapeutic composition for administration to a human subject.~~

~~34. The method of claim 33, wherein the physiological saline comprises dextran 40 and HSA at amounts such that, after dilution, the therapeutic composition comprises about 8% dextran and about 4% HSA.~~

~~35. The method of claim 33, wherein the method does not comprise any centrifugation steps.~~

~~36. The method of claim 33 or 34, wherein the method does not comprise removing the freezing medium or cyropreservative.~~

~~37.~~17. A method of freezing endothelial cells, the method comprising:

a. suspending endothelial cells (ECs) at a density of from about 50 million cells per ml to about 150 million cells per ml in a freezing medium, wherein the freezing medium comprises an effective amount of a cryopreservative, thereby creating a freezing composition, and

b. subjecting the freezing composition to a gradual decrease in temperature to about -80°C to -90 °C.

~~38.~~18. The method of claim 17~~37~~, wherein in step (b) the temperature is decreased at a rate of about 1°C per minute.

~~39.~~19. The method of claim 17~~37~~ or claim 18~~38~~, comprising subsequently transferring the freezing composition to liquid nitrogen.

~~40. The method of any of claims 37-39, wherein the endothelial cells (ECs) are at a density of from about 75 million cells per ml to about 125 million cells per ml.~~

~~41. The method of any of claims 37-39, wherein the endothelial cells (ECs) are at a density of about 100 million cells per ml.~~

~~42.~~20. The method of any of claims 17-19~~37-41~~, wherein the ECs are human umbilical vein endothelial cells (HUVECs).

43. The method of any of claims 37-42, wherein the freezing medium comprises human serum albumin (HSA).

44. The method of any of claims 37-43, wherein the freezing medium comprises about 10% human serum albumin (HSA).

45. The method of any of claims 37-44, wherein the cryopreservative is selected from the group consisting of dimethyl sulfoxide, ethylene glycol, propylene glycol, and glycerol.

46. The method of any of claims 37-45, wherein the cryopreservative is dimethyl sulfoxide.

47. The method of any of claims 37-46, wherein the freezing medium comprises from about 5% to about 10% dimethyl sulfoxide.

48. The method of any of claims 37-47, wherein the freezing medium comprises about 10% dimethyl sulfoxide.

49. The method of any of claims 37-48, wherein the freezing medium comprises a cell culture medium.

50. The method of any of claims 37-49, wherein the freezing medium comprises an endothelial growth medium.

51. The method of any of claims 37-50, wherein the endothelial cells (ECs) are adenovirus E4ORF1+ ECs.

52. The method of any of claims 37-51, wherein the ECs comprise a recombinant nucleotide sequence that encodes an adenovirus E4ORF1 protein.

53. The method of claim 52, wherein the wherein the nucleotide sequence is operatively linked to a heterologous promoter.

54. The method of claim 52 or 53, wherein the nucleotide sequence is within a vector.

55. The method of claim 54, wherein the vector is a retroviral vector.

56. The method of claim 55, wherein the retroviral vector is a lentiviral vector.

~~57. The method of claim 55, wherein the retroviral vector is a Maloney murine leukemia virus (MMLV) vector.~~

~~58. The method of any of claims 51-57, wherein the E4ORF1 is human adenovirus type 5 E4ORF1.~~

~~59. The method of any of claims 51-58, wherein the ECs do not comprise an entire adenovirus E4 region.~~

~~60. The method of any of claims 51-59, wherein the ECs do not comprise do not comprise an E4ORF2, E4ORF3, E4ORF4, E4ORF5 or E4ORF6 coding sequence or amino acid sequence.~~

~~61. The method of any of claims 37-60, wherein the freezing composition further comprises hematopoietic stem cells or hematopoietic progenitor cells.~~

~~62. The method of claim 61, wherein the hematopoietic stem cells or hematopoietic progenitor cells are from bone marrow.~~

~~63. The method of claim 61, wherein the hematopoietic stem cells or hematopoietic progenitor cells are from peripheral blood.~~

~~64. The method of claim 61, wherein the hematopoietic stem cells or hematopoietic progenitor cells are from amniotic fluid.~~

~~65. The method of claim 61, wherein the hematopoietic stem cells or hematopoietic progenitor cells are from umbilical cord blood.~~

~~66. The method of any of claims 37-65, wherein the freezing composition is in a freezing container.~~

~~67. The method of claim 66, wherein the freezing container is a cryovial.~~

~~68. The method of claim 66, wherein the freezing container is a cryobag.~~

~~69. The method of claim 66, wherein the freezing container is adapted for aseptic transfer of its contents to a patient in a closed system.~~