

We claim:

1. A cryopreservation medium for cryopreserving mammalian cells, the medium comprising: dimethyl sulfoxide (DMSO), disaccharide, human serum, and IL-7 or IL-15.
2. A cryopreservation medium for cryopreserving mammalian cells, the medium comprising: dimethyl sulfoxide (DMSO), disaccharide, human serum albumin, and IL-7 or IL-15.
3. The cryopreservation medium of claim 1 or 2, wherein the medium comprising: IL-7 and IL-15.
4. A cryopreservation medium for cryopreserving mammalian cells, the medium comprising: between about 1 w/v % and 10 w/v % dimethyl sulfoxide (DMSO), between about 0.25 w/v % and 5 w/v % disaccharide, and between about 10 w/v % and 90 w/v % human serum.
5. A cryopreservation medium for cryopreserving mammalian cells, the medium comprising: between about 1 w/v % and 10 w/v % dimethyl sulfoxide (DMSO), between about 0.25 w/v % and 5 w/v % disaccharide, and between about 0.5w/v % and 30 w/v % human serum albumin.
6. The cryopreservation medium of any one of the preceding claims, wherein the disaccharide is sucrose.
7. The cryopreservation medium of claim 6, wherein the medium further comprises D-glucose.

8. The cryopreservation medium of claims 4-7, further comprising one or more cytokines.
9. The cryopreservation medium of claim 8, wherein the cytokines are selected from IL-7 and IL-15.
10. The cryopreservation medium of claims 4-9 comprising IL-7 and IL-15.
11. The cryopreservation medium of claim 10, wherein IL-7 is present at a final concentration of between about 1 ng/mL and 50 ng/mL.
12. The cryopreservation medium of claim 11, wherein IL-7 is present at a final concentration of about 5 ng/mL.
13. The cryopreservation medium of claim 10, wherein IL-15 is present at a final concentration of between about 1 ng/mL and 50 ng/mL.
14. The cryopreservation medium of claim 13, wherein the IL-15 is present at a final concentration of about 5 ng/mL.
15. The cryopreservation medium of any one of the preceding claims, further comprising a mammalian cell culture medium.
16. The cryopreservation medium of claim 15, wherein the mammalian cell culture medium is present at about between 10 w/v% and 90 w/v%.
17. The cryopreservation medium of any one of claims 15-16, wherein the mammalian cell culture medium does not comprise non-human animal components.

18. The cryopreservation medium of any one of the preceding claims, further comprising one or more amino acids.
19. The cryopreservation medium of any one of the preceding claims, further comprising one or more inorganic salts.
20. The cryopreservation medium of any one of the preceding claims, wherein the pH between about 7 and 8.
21. A kit comprising the cryopreservation medium of any one of the preceding claims.
22. A method of cryopreserving mammalian cells, the method comprising:
- (a) contacting the cells with a cryopreservation medium of any one of claims 1-20; and
 - (b) cooling the cells by about 1°C/minute to a temperature of -80°C or below.
23. A method of cryopreserving and recovering viable cells, the method comprising:
- (a) contacting the cells with a cryopreservation medium of any one of claims 1-20;
 - (b) cooling the cells by about 1°C/minute to a temperature of -80°C or below thereby cryopreserving the cells; and
 - (c) thawing the cryopreserved cells.
24. The method of claim 23, wherein the thawed cryopreserved cells are not washed prior to subsequent culture or transplantation into a subject.

25. The method of claim 24, wherein the thawed cryopreserved cells have enhanced cell survival in comparison to cells frozen and thawed with a cryopreservation medium not of any one of claims 1-20.
26. The method of claim 25, wherein the thawed cryopreserved cells have enhanced cell survival in vitro.
27. The method of claim 25, wherein the thawed cryopreserved cells have enhanced cell survival following transplantation into a subject.
28. The method of any one of claims 22-27, wherein the mammalian cells are lymphocytes or progenitor cells.
29. The method of any one of claims 22-27, wherein the mammalian cells are genetically modified lymphocytes or progenitor cells.
30. The method of any one of claims 22-27, wherein the mammalian cells are induced pluripotent cell (iPSC)-derived lymphocytes or progenitor cells.
31. The method of any one of claims 28-30, wherein the lymphocytes are T cells or natural killer (NK) cells.
32. The method of claim 28, wherein the progenitor cells are iPSC, hematopoietic progenitor cells (HPC), or embryonic stem cells (ESC).
33. The method of claim 28, wherein the mammalian cells are suitable for adoptive cell therapy.