CLAIMS

1. A method for obtaining umbilical cord tissue-derived cells from a newborn donor for use in HLA matched transfer to a recipient, comprising the steps of:

collecting a section of umbilical cord from the newborn donor;

isolating a minced portion of the umbilical cord;

extracting umbilical cord tissue-derived cells from the minced portion of the umbilical cord to derive a stem cell population therefrom; and

determining HLA markers of the donor to support HLA matching for treatment of a disease or disorder of the recipient.

2. The method of claim 1, wherein the donor and the recipient are the same.

3. The method of claim 1, wherein the steps of the method are performed in a single medical procedure.

4. The method of claim 1, wherein the steps of the method are performed at the site of delivery of the donor as a point of care site.

5. The method of claim 1, wherein the transfer is allogeneic, and including:

preserving the umbilical cord tissue-derived stem cell population for subsequent administration to the recipient having HLA markers matching those of the donor.

6. The method of claim 1, wherein the transfer is allogeneic, and including:

extracting and analyzing a sample of cells derived from umbilical cord blood of the donor to determine therefrom the HLA type of the donor umbilical cord tissue derived-cells upon their maturation, and

preserving the umbilical cord tissue-derived stem cell population for subsequent administration to the recipient having HLA markers matching those of the donor.

7. The method of claim 6, including:

cryopreserving the umbilical cord tissue-derived cell population in a cell bank according to the HLA type of the stored cells.

8. The method of claim 7, including:

cataloging the stored cells of different HLA types in the cell bank for rapid retrieval of stored cells of a particular HLA type to be administered for allogeneic transfer to a matching recipient.

9. The method of claim 8, including:

posting a catalog of stored cells by different HLA type in the cell bank on a remotely accessible electronic database for retrieval of matching available donor cells.

10. The method of claim 7, including:

cryopreserving stem cells derived from blood of the umbilical cord of the donor for storage together with the umbilical cord tissue-derived stem cells of the same donor in the cell bank to enhance identification of the HLA type of the stored tissue-derived cells of the donor.

11. A system for isolation of fresh uncultured umbilical cord tissue-derived cells for transfer from a newborn donor to a recipient, comprising:

a centrifuge adapted for extracting nucleated tissue from a minced section of umbilical cord collected from the newborn donor~~;~~

and disposed in centrifuge tubes wherein the centrifuge includes lock tube holders that hold the centrifuge tubes in an inverted upright position and enzymatically process the tissue for 1 to 4 hours at 37 - 40°C, wherein nucleated cells are released from the tissue for further processing by filtration, washing and concentration prior to transfer to a recipient as fresh or cryopreserved uncultured cells.

12. The system of claim 11, wherein the donor and the recipient are the same.

13. The system of claim 11, wherein the centrifuge is positioned to perform its function within the site of delivery of the donor as the point of care site.

14. The system of claim 11, wherein the fresh uncultured umbilical cord tissue-derived cells are utilized for allogenic transfer to an HLA matched recipient, and further including:

means for extracting and analyzing a nucleated cell sample of the donor to predict the HLA type of the donor cells upon their maturation, and

means for preserving the umbilical cord tissue-derived stem cell population for subsequent administration to said HLA matched recipient.

15. The system of claim 11, wherein the transfer is allogeneic, and further including:

means for extracting and analyzing a sample cells derived from umbilical cord blood of the donor to determine therefrom the HLA type of the donor umbilical cord tissue derived-cells upon their maturation, and

means for preserving the umbilical cord tissue-derived stem cell population for subsequent administration to said recipient having HLA markers matching those of the donor.

16. The system of claim 15, including:

means for cryopreserving the umbilical cord tissue-derived cell population; and

a cell bank for storage of the cryopreserved umbilical cord tissue-derived cell population according to the HLA type of the stored cells to distinguish from stored cells of a different HLA type in the bank.

17. The system of claim 16, including:

an electronic catalog of the stored cells of different HLA type in the bank for rapid retrieval of stored cells of a particular HLA type to be administered for allogeneic transfer to a matching recipient.

18. The system of claim 17, including:

a remotely accessible electronic database for posting the catalog of stored cells by different HLA type in the bank for retrieval to assist matching of potential recipients to available donor cells.

19. The system of claim 16, including:

said cryopreserving means for stem cells derived from blood of the umbilical cord of the donor for storage together with the cryopreserved umbilical cord tissue-derived stem cells of the same donor in the cell bank to enhance identification of the HLA type of the stored tissue-derived cells of said donor.

20. A system for processing umbilical cord tissue from a newborn donor at site of delivery of the donor comprising:

a tissue processing unit adapted for processing the umbilical cord tissue in close proximity to the delivery site; wherein the processing is carried out by introduction of a reagent into said unit which comprises a centrifuge adapted for extracting nucleated tissue from a minced section of umbilical cord collected from a newborn donor; and disposed in centrifuge tubes wherein the centrifuge is designed to lock tube holders containing the centrifuge tubes in an inverted upright position and enzymatically process the tissue for 1 to 4 hours at 37°C - 40°C, wherein the nucleated cells are released from the tissue for

filtration and concentration prior to immediate transfer to a recipient as fresh cells or cryopreservation, and

a receptacle for recovery of a cell preparation from processing of the umbilical cord tissue in the presence of the reagent such that the recovered cell preparation contains regenerative cells in a sufficient number to be used for therapeutic purposes without culture or expansion.

21. The system of claim 20 wherein the reagent comprises a mixture of one or more of a collagenase and a protease.

22. The system of claim 20 including means for retaining the recovered cell preparation for administration to the donor.

23. The system of claim 22 wherein retaining means retains a number of regenerative cells in the recovered cell preparation sufficient to alleviate conditions associated with pregnancy or delivery related complications suffered by the donor.

24. The system of claim 23 wherein the complications include any among cerebral hypoxia, cerebral palsy, and low APGAR scores.

25. The system of claim 20 further including means for dividing the recovered cell preparation into a plurality of aliquots, for administration of a first aliquot to the donor within the first 24 hours of delivery and subsequent administration of a second aliquot to the donor.

26. The system of claim 22 wherein the retaining means is configured for administration by one of intravenously, intra-arterially, intrathecally, infusion, direct injection, and to a mucosal membrane.

27. A system for matched transfer of umbilical cord tissue-derived cells from a donor to a recipient comprising:

a collector of a sample of human leukocyte antigen expressing cells from a potential donor; and

an analyzer of the sample to predict the human leukocyte antigen expression pattern of the umbilical cord tissue derived cells to be assumed after transfer to a recipient.

28. The system of claim 27 wherein the analyzer uses the results of the sample analysis to confirm that the potential donor is a match to the recipient’s HLA.

29. A method for combined usage of umbilical cord blood and umbilical cord tissue-derived cells from the same donor for regenerative purposes, comprising

collecting a section of umbilical cord from a newborn donor;

collecting umbilical cord blood from the umbilical cord and isolating cord blood stem cells from the umbilical cord blood;

extracting umbilical cord tissue-derived cells from the umbilical cord to derive a tissue stem cell population therefrom and pooling the isolated cord blood stem cells with the tissue stem cell population; and

pooling both type of cells for use in transplanting to an HLA matched recipient to thereafter attain an enhanced benefit in the recipient owing to a complementary nature of both types of cells.

30. A method for processing umbilical cord tissue-derived stem cells obtained from a newborn donor, comprising:

culturing the stem cells, and recovering media or exosomes from the cultured cells, and

preserving the recovered media or exosomes for use in a non-matched administration for an allogeneic recipient.

31. A method for processing umbilical cord tissue obtained from a newborn donor, comprising:

deriving stem cells from a minced portion of the cord tissue by placing the minced tissue in a centrifuge tube together with an enzymatic reagent and disposing the centrifuge tube in a centrifuge designed to lock tube holders containing the centrifuge tubes in an inverted upright position and enzymatically process the tissue for 1 to 4 hours at 37°C - 40°C, wherein the stem cells are released from the tissue for filtration and concentration for purposes of immediate transfer to a recipient as fresh cells or for cryopreservation, wherein the stem cells are suitable for

matched allogeneic transplant, including injecting the stem cells into a growing fetus via the umbilical cord artery or into the circulation of the growing fetus, to correct genetic diseases of the growing fetus, including muscular dystrophy and, amelioration or correction of mental diseases that are based on a genetically defective background.