I claim:

1. An ~~isolated~~ proliferated population of expanded~~able~~ human neural cell wherein the cells ~~is a~~ are progenitor cells or stem cells,

wherein the cells ~~haves~~ been cultured under conditions effective to enrich for the expanded~~able~~ neural cells, said conditions comprising, a culture medium comprising an effective amount of a growth supplement, wherein the growth supplement is 1-thioglycerol

~~wherein~~ and the effective amount of growth supplement in the culture medium is at least 10 μM of 1-thioglycerol to isolate human fetal spinal cord ("HFSC") cells,

wherein the cells maintains ~~its~~ their capability to differentiate into neurons, astrocytes, and oligodendrocytes,

wherein the cells maintains ~~its~~ their ability to differentiate into oligodendrocyte lineage cells efficiently throughout subsequent passages,

and wherein the population of cells ~~expresses~~ at least cell surface antigens ~~like~~ CD133, CD140a, A2B5, and PSA-NCAM.

2. The ~~isolated~~ proliferated population of expanded~~able~~ human neural cells of claim 1, wherein said cells ~~haves~~ been deposited as ATCC accession number PTA-12291.

3. The proliferated population of expanded~~able~~ human neural cells of claim 1, wherein the cells ~~is~~ are derived from a human fetal neural tissue selected from the group consisting of spinal cord, cerebral cortex, hippocampus, striatum, basal forebrain, ventral mesencephalon, locus ceruleus, hypothalamus, cerebellum, corpus callosum and optic nerve.

4. The proliferated population of expanded~~able~~ human neural cells of claim 3, wherein said neural tissue is isolated from the human spinal cord at 8-24 weeks gestation.

5. The proliferated population of expanded~~able~~ human neural cells of claim 1, wherein the ~~culture~~ conditions effective to enrich for the expanded neural cells further comprise two growth factors, and one survival factor.

6. The proliferated population of expandedable human neural cells of claim 5, wherein said two growth factors are platelet derived growth factor (PDGF) and basic fibroblast growth factor (bFGF) and are present in a concentration of at least 5 ng/ml of PDGF and at least 2.5 ng/ml of bFGF to isolate HFSC cells.

7. The proliferated population of expandedable human neural cells of claim 5, wherein said two growth factors are PDGF and bFGF and are present in a concentration of about 40 ng/ml to about 200 ng/ml of PDGF and about 5 ng/ml to about 40 ng/ml of bFGF to isolate HFSC cell.

8. The proliferated population of expandedable human neural cells of claim 5, wherein said two growth factors are PDGF and bFGF and are present in a concentration of about 100 ng/ml of PDGF and about 20 ng/ml of bFGF to isolate HFSC. cell.

9. The proliferated population of expandedable human neural cells of claim 5, wherein said two growth factors are PDGF and bFGF and are present in a concentration of at least 1 ng/ml of PDGF and at least 0.5 ng/ml of bFGF to expand HFSC cell after a cell line is established and in order to maintain the cells.

10. The proliferated population of expandedable human neural cells of claim 5, wherein said two growth factors are PDGF and bFGF and are present in a concentration of about 5 ng/ml to about 100 ng/ml of PDGF and about 1 ng/ml to about 50 ng/ml of bFGF to expand HFSC cells after the establishment.

11. The proliferated population of expandedable human neural cells of claim 5, wherein said two growth factors are PDGF and bFGF and are present in a concentration of about 20 ng/ml of PDGF and about 20 ng/ml of bFGF to expand HFSC cells after the establishment.

12. The proliferated population of expandedable human neural cells of claim 5, wherein said one survival factor is Insulin-like growth factor (IGF) and is present in a concentration of at least 1 ng/ml of IGF.

13. The proliferated population of expandedable human neural cells of claim 5, wherein said one survival factor is IGF and is present in a concentration of **about** 5 ng/ml to **about** 100 ng/ml of IGF.

14. The proliferated population of expandedable human neural cells of claim 5, wherein said one survival factor is IGF and is present in a concentration of **about** 20 ng/ml of IGF.

15. The proliferated population of expandedable human neural cells of claim 1, wherein the cells can be frozen and thawed without losing its ability to differentiate into neurons, astrocytes, and oligodendrocytes throughout subsequent passages, and its their ability to express at least cell surface antigens **like** CD133, CD140a, A2B5, and PSA-NCAM.

16. A The method of *in vitro* culturing of an expandable neural cell, until an essentially homogenous expandable neural cell population is produced wherein the cell is a progenitor cell or stem cell isolated from a mammalian central nervous system wherein said cell maintains its capability to differentiate into neurons, astrocytes, and oligodendrocytes and its ability to differentiate into oligodendrocyte-lineage cells efficiently, said method comprising:

a) a Step comprising of isolating and dissociating at least one cell from a human fetal neural tissue;

b) a Step for culturing the cell at a temperature of 37°C degree Celsius in an atmosphere comprising 1-20% O_2, and 5% CO_2, and in a chemically defined serum-free culture medium, wherein the medium comprises of:

-at least 5 ng/ml PDGF-AA,

-at least 0.5 ng/ml bFGF, and,

-at least 10 μM 1-thioglycerol, and,

c) passaging the cell from b)

d) repeating steps b) and c) a plurality of times to obtain said essentially homogeneous the expandable human neural cell.

17. The method of claim 16, wherein said culture is additionally comprised of medium further comprises at least 1.0 ng/ml IGF-1.

18. The method of claim 16, wherein ~~said~~ the ~~neural~~ nervous tissue is derived from a human fetal neural tissue selected from the group consisting of spinal cord, cerebral cortex, hippocampus, striatum, basal forebrain, ventral mesencephalon, locus ceruleus, hypothalamus, cerebellum, corpus callosum and optic nerve.

19. ~~The~~ A method of claim 16, wherein the nervous tissue is comprised of a ~~in step a), said neural tissue is from~~ human fetal spinal cord at 8-24 weeks gestation~~.~~ weeks in Step a).

20. The method of claim 16, wherein ~~in~~ sStep a) is conducted using an~~,~~ ~~said isolating is performed by an~~ isolation~~ng~~ method whereby said isolation step utilizes ~~which uses at~~ least one of fluorescence activated cell sorting (FACS) or ~~immuno~~immunity panning.

21. The method of claim 17 wherein said culture medium ~~comprises:~~ includes

-40-to200 ng/ml PDGF-AA,

-5-to100 ng/ml bFGF,

- 10-to100 µM 1-thioglycerol~~,~~ and,

- 5-to100 ng/ml IGF-1.

22. The method of claim 17 wherein said culture ~~medium comprises:~~ includes

- ~~about~~ 100 ng/ml of PDGF-AA,

- ~~about~~ 20 ng/ml of bFGF,

- ~~about~~ 50 µM of 1-thioglycerol~~,~~ and,

- ~~about~~ 20 ng/ml of IGF-1.

23. The method of claim ~~17~~ 18 wherein said culture ~~medium comprises:~~ includes

- 5- to100 ng/ml of PDGF-AA,

- 1- to 50 ng/ml of bFGF,

- 10- to100 µM of 1-thioglycerol~~,~~ and,

- 5- to100 ng/ml of IGF-1.

24. The method of claim 17 wherein said culture ~~medium comprises:~~ includes

- ~~about~~ 20 ng/ml of PDGF-AA,
- ~~about~~ 20 ng/ml of bFGF,
- ~~about~~ 50 µM of 1-thioglycerol, and,
- ~~about~~ 20 ng/ml of IGF-1.

25. The method of claim 17, wherein the step whereby said cultivation occurs is conducted in a culture container ~~culturing step takes place in a culture vessel~~ that is coated ~~with~~ in poly-ornithine or poly-lysine.

26. The method of claim 17 wherein the aforementioned chemically defined serum-free culture medium ~~comprises~~ includes DMEM/F12 to which ~~supplemented with~~ non-essential amino acids, glutamine, pyruvate, B27, N-acetyl-cysteine and β-mercaptoethanol.

27. ~~An *in vitro* culture comprising at least one isolated neural cell obtained from a mammalian central nervous system wherein the isolated cell is submerged in~~ A preparation whereby said cells are immersed in a chemically defined serum-free ~~culture~~ medium of which includes ~~comprising:~~
    - at least 5 ng/ml of PDGF-AA,
    - at least 5 ng/ml of bFGF, and,
    - at least 10 µM of 1-thioglycerol,

    wherein said cells are an in-vitro preparation comprised of at least one isolated neuron obtained from the mammalian central nervous system.

28. ~~The~~ An *in- vitro* ~~culture~~ preparation of claim 27, ~~further comprising~~ wherein additionally comprised of at least 1.0 ng/ml IGF-1.

29. ~~The~~ An *in- vitro* ~~culture~~ preparation of claim 28, wherein said cells ~~is~~ are obtained from human fetal spinal cord.

30. ~~The~~ An *in- vitro* ~~culture~~ preparation of claim 29, wherein said preparation ~~the *in vitro* culture~~ is in a culture ~~vessel~~ container that is coated ~~with~~ in polyornmithine or polylysine.

31. ~~The~~ An *in- vitro* ~~culture~~ preparation ~~*in vitro* culture~~ of claim 29, wherein said in-vitro preparation comprises ~~the~~ chemically defined serum-free ~~culture~~

medium ~~further comprises~~ includes DMEM/F12 ~~supplemented with~~ to which non-essential amino acids, glutamine, pyruvate, B27, N-acetyl-cysteine and β-mercaptoethanol is added.

32. ~~The~~ An *in- vitro* ~~culture~~ preparation of claim 29, wherein said neuronsal ~~cell is~~ are ~~CD~~C133-positive, CD140a-positive, A2B5-positive, and PSA-NCAM-positive.

33. ~~A method of treating a condition caused by a loss of myelin or a loss of oligodendrocytes comprising:~~

~~administering to a subject a therapeutically effective amount of a composition comprising the isolated expandable human neural cell of claim 1.~~

34. ~~The method of claim 33, wherein said condition is a demyelinating disease or a neurodegenerative disease.~~

35. ~~The method of claim 34, wherein said demyelinating disease is selected from the group consisting of spinal cord injury (SCI), multiple sclerosis (MS), hereditary leukodystrophy, transverse myelopathy/myelitis, progressive multiple focal leukoencephalopathy and other congenital demyelinating diseases.~~

36. ~~The method of claim 34, wherein said neurodegenerative disease is selected from the group consisting of Alzheimer's disease, senile dementia of Alzheimer type (SDAT), Parkinson's disease, Huntington's disease, Amyotrophic Lateral Sclerosis (ALS), ischemia, blindness and a neurodegenerative disease caused by injury to myelinated neurons.~~

37. ~~The method of claim 34, wherein the administering step comprises injecting the expandable human neural cell into neural tissue or lateral ventricles affected by the demyelinating disease or the neurodegenerative disease.~~

38. ~~The method of claim 37, wherein said neural tissue is selected from the group consisting of the spinal cord, the subventricular zone, the corpus callosum, the cerebellum, the basal ganglia, the nucleus basalis and the substantial nigra.~~

~~39. The method of claim 34, wherein the administering step comprises injecting the expandable human neural cell into said subject by the method consisting of transuterine fetal intraventricular injection, intraventricular injection, intraparenchymal injections, intravitreal injection and intravascular administration.~~

~~40. The method of claim 35, further comprising the step of differentiating the expandable human neural cell prior to the administering step.~~

41~~33~~. A pharmaceutical ~~**34 stem**~~ neural cell composition comprising ~~an isolated~~ the expanded~~able human~~ neural cells ~~as in~~ of claim 1 that have been in vitro cultured.

42~~34~~. A pharmaceutical neural ~~stem~~ cell composition comprising of the ~~an~~ expanded~~able~~ neural cells that have~~s~~ been *in-vitro* cultured ~~by~~ using the method ~~of~~ as noted in claim 16.

43~~35~~. ~~Use of the pharmaceutical composition of claim 41 or claim 42 in the preparation of a medicament for the treatment of a condition~~ A method of treating a condition caused by a loss of myelin or a loss of oligodendrocytes due to the usage of the pharmaceutical preparation of the pharmaceutical composition as noted in claims 33 or 34.