WHAT IS CLAIMED IS

1. An isolated hypoimmunogenic cell comprising one or more genetic modifications, wherein the isolated hypoimmunogenic cell:

(i) has reduced expression of β-2 microglobulin (B2M) and reduced expression of class II transactivator (CIITA) compared to a wild-type cell,

(ii) has increased cell surface expression of a functional CD47 protein compared to the wild-type cell,

(iii) comprises a safety switch,

(iv) is differentiated from a pluripotent cell, and

(v) is a glial cell or a dopaminergic neuron.

2. The isolated hypoimmunogenic cell of claim 1, wherein the pluripotent cell is a human cell, the B2M is a human B2M, the CIITA is a human CIITA, and the increased cell surface expression of a functional CD47 protein results from at least one copy of a CD47 transgene under the control of a promoter introduced into the pluripotent cell.

3. The isolated hypoimmunogenic cell of claim 1, wherein the pluripotent cell is a mouse cell, the B2M is a mouse B2M, the CIITA is a mouse CIITA, and the increased cell surface expression of a functional CD47 protein results from at least one copy of a mouse CD47 transgene under the control of a promoter introduced into the pluripotent cell.

4. The isolated hypoimmunogenic cell of any one of claims 1 to 3, wherein the reduced expression of B2M results from a Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR)/Cas mediated disruption of both alleles of the B2M gene.

5. The isolated hypoimmunogenic cell of any one of claims 1 to 4, wherein the reduced expression of CIITA results from a CRISPR/Cas mediated disruption of both alleles of the CIITA gene.

6. The isolated hypoimmunogenic cell of any one of claims 1 to 5, wherein the safety switch is a suicide gene.

7. The isolated hypoimmunogenic cell of claim 6, wherein the suicide gene is activated by a trigger agent that induces the isolated hypoimmunogenic cell to die.

8. The isolated hypoimmunogenic cell of claim 7, wherein the suicide gene is a herpes simplex virus thymidine kinase (HSV-tk) gene and the trigger agent is ganciclovir.

9. The isolated hypoimmunogenic cell of claim 8, wherein the HSV-tk gene encodes a protein comprising at least 90% sequence identity to SEQ ID NO:4.

10. The isolated hypoimmunogenic cell of claim 7, wherein the suicide gene is an *Escherichia coli* cytosine deaminase (CD) gene and the trigger agent is 5-fluorocytosine (5-FC).

11. The isolated hypoimmunogenic cell of claim 10, wherein the CD gene encodes a protein comprising at least 90% sequence identity to SEQ ID NO:5.

12. The isolated hypoimmunogenic cell of claim 7, wherein the suicide gene encodes an inducible caspase 9 protein and the trigger agent is a chemical inducer of dimerization (CID).

13. The isolated hypoimmunogenic cell of claim 12, wherein the inducible caspase 9 protein comprises at least 90% sequence identity to SEQ ID NO:6.

14. The isolated hypoimmunogenic cell of claim 12 or 13, wherein the CID is compound AP1903.

15. The isolated hypoimmunogenic cell of any one of claims 1 to 14, wherein the hypoimmunogenic glial cell is an astrocyte or an oligodendrocyte, or wherein the dopaminergic neuron is a neuronal stem cell, a neuronal progenitor cell, an immature dopaminergic neuron, or a mature dopaminergic neuron.

16. The isolated hypoimmunogenic cell of any one of claims 1 to 15, wherein the increased cell surface expression of a functional CD47 protein results from a modified endogenous CD47 gene locus and/or introduction of at least one copy of a CD47 transgene.

17. The isolated hypoimmunogenic cell of any one of claims 1 to 16, wherein the increased cell surface expression of a functional CD47 protein results from the exchange of an endogenous for (i) a constitutive promoter or (ii) an inducible promoter.

18. The isolated hypoimmunogenic cell of any one of claims 1 to 17, wherein the increased cell surface expression of a functional CD47 protein results from introduction of at least one copy of a CD47 transgene under the control of an inducible or constitutive promoter.

19. The isolated hypoimmunogenic cell of any one of claims 1, 2, or 4 to 18, wherein the hypoimmunogenic cell is a human cell.

20. A composition comprising a therapeutically effective amount of a population of the isolated hypoimmunogenic cell of any one of claims 1 to 19, for use in a method of treating a neurodegenerative disease or a neuropsychiatric disorder.

21. The composition of claim 20, wherein the composition further comprises a therapeutically effective carrier.

22. The composition of claim 20 or 21, wherein the composition is suitable for administration via transplantation, injection, or intravenous injection, or transplantation into the substantia nigra, the ventral tegmental area (VTA), the caudate, the putamen, the nucleus acccumbens, the subthalamic nucleus, or any combination thereof.

23. The composition of any one of claims 20 to 22, wherein the neurodegenerative disease is Parkinson's disease, Huntington disease, or multiple sclerosis; or wherein the neuropsychiatric disorder is attention deficit hyperactivity disorder (ADHD), Tourette Syndrome (TS), schizophrenia, psychosis, or depression.

24. A method of producing a population of isolated hypoimmunogenic dopaminergic neurons from a population of hypoimmunogenic pluripotent cells (HIP cells) by *in vitro* differentiation, wherein the HIP cells comprise (i) reduced expression of β-2 microglobulin (B2M) and class II transactivator (CIITA) compared to a wild-type cell, (ii) increased cell surface expression of a functional CD47 protein compared to the wild type cell, and (iii) a safety switch,

wherein the method comprises:

(a) culturing the population of HIP cells in a first culture medium comprising one or more factors, wherein the one or more factors include sonic hedgehog (SHH), brain-derived neurotrophic factor (BDNF), epidermal growth factor (EGF), basic fibroblast growth factor (bFGF), fibroblast growth factor 8 (FGF8), WNTl, retinoic acid, a GSK3P inhibitor, an ALK inhibitor, a ROCK inhibitor, or a combination thereof to produce a population of immature dopaminergic neurons; and

(b) culturing the population of immature dopaminergic neurons in a second culture medium that is different than the first culture medium to produce a population of hypoimmunogenic dopaminergic neurons.

25. The method of claim 24, wherein the GSK3P inhibitor is CHIR-99021, a derivative thereof, or a variant thereof.

26. The method of claim 24 or 25, wherein the GSK3P inhibitor is at a concentration ranging from about 2 μM to about 10 μM.

27. The method of any one of claims 24 to 26, wherein the ALK inhibitor is SB-431542, a derivative thereof, or a variant thereof.

28. The method of any one of claims 24 to 27, wherein the ALK inhibitor is at a concentration ranging from about 1 μM to about 10 μM.

29. The method of any one of claims 24 to 28, wherein the first culture medium and/or second culture medium are absent of animal serum.

30. The method of any one of claims 25 to 29, wherein the safety switch is a suicide gene and the method further comprises culturing the population of dopaminergic neurons after differentiation in a culture medium comprising a trigger agent that activates the suicide gene, and

wherein the trigger agent is ganciclovir if the suicide gene is a herpes simplex virus thymidine kinase (HSV-tk) gene, the trigger agent is 5-fluorocytosine (5-FC) if the suicide gene is an *Escherichia coli* cytosine deaminase (CD) gene, or the trigger agent is a chemical inducer of dimerization (CID) if the suicide gene encodes an inducible caspase 9 protein.

31. The method of any one of claims 25 to 30, further comprising isolating hypoimmunogenic dopaminergic neurons from non-dopaminergic neurons to obtain a population of isolated hypoimmunogenic dopaminergic neurons.

32. The method of any one of claims 25 to 31, wherein the method further comprises cryopreserving the population of isolated dopaminergic neurons.

33. A method of producing a population of isolated hypoimmunogenic glial cells or dopaminergic neurons from a population of pluripotent cells by *in vitro* differentiation, the method comprising:

(a) introducing into the population of pluripotent cells:

(i) one or more genetic alterations that result in reduced expression of β-2 microglobulin (B2M) compared to a wild-type cell,

(ii) one or more genetic alterations that result in reduced expression of class II transactivator (CIITA) compared to the wild-type cell,

(iii) one or more genetic alterations that result in increased cell surface expression of a functional CD47 protein as compared to the wild-type cell, and

(iv) a safety switch, and

(b) culturing the population of pluripotent cells *in vitro* under conditions that differentiate pluripotent cells into glial cells or dopaminergic neurons.

34. The method of claim 33, wherein the pluripotent cell is a pluripotent cell.

35. The method of claim 34, wherein the pluripotent cell is a human cell, the B2M is a human B2M, the CIITA is a human CIITA, and the cell surface expression of a functional CD47 protein is increased by introducing at least one copy of a CD47 transgene under the control of a promoter into the pluripotent cell.

36. The method of claim 34, wherein the pluripotent cell is a mouse cell, the B2M is a mouse B2M, the CIITA is a mouse CIITA, and the cell surface expression of a functional CD47 protein is increased by introducing at least one copy of a mouse CD47 transgene under the control of a promoter into the pluripotent cell.

37. The method of any one of claims 34 to 36, wherein B2M expression is reduced by a Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR)/Cas mediated disruption of both alleles of the B2M gene.

38. The method of any one of claims 34 to 37, wherein CIITA expression is reduced by a CRISPR/Cas mediated disruption of both alleles of the CIITA gene.

39. The method of any one of claims 34 to 38, wherein the safety switch is a suicide gene.

40. The method of claim 39, wherein the suicide gene is activated by a trigger agent that induces the isolated hypoimmunogenic glial cells or dopaminergic neurons to die.

41. The method of claim 39, wherein the suicide gene is a herpes simplex virus thymidine kinase (HSV-tk) gene and the trigger agent is ganciclovir.

42. The method of claim 41, wherein the HSV-tk gene encodes a protein comprising at least 90% sequence identity to SEQ ID NO:4.

43. The method of claim 40, wherein the suicide gene is an *Escherichia coli* cytosine deaminase (CD) gene and the trigger agent is 5-fluorocytosine (5-FC).

44. The method of claim 43, wherein the CD gene encodes a protein comprising at least 90% sequence identity to SEQ ID NO:5.

45. The method of claim 40, wherein the suicide gene encodes an inducible caspase 9 protein and the trigger agent is a chemical inducer of dimerization (CID).

46. The method of claim 45, wherein the inducible caspase 9 protein comprises at least 90% sequence identity to SEQ ID NO:6.

47. The method of claim 45 or 46, wherein the CID is compound AP1903.

48. The method of any one of claims 34 to 47, wherein the population of isolated hypoimmunogenic glial cells comprise an astrocyte and/or an oligodendrocytes; or wherein the population of isolated hypoimmunogenic dopaminergic nerurons comprise a neuronal stem cell, a neuronal progenitor cell, an immature dopaminergic neuron, or a mature dopaminergic neuron.

49. The method of any one of claims 34 to 48, wherein the cell surface expression of a functional CD47 protein is increased by modifying an endogenous CD47 gene locus or introducing a CD47 transgene.

50. The method of any one of claims 34 to 49, wherein the cell surface expression of a functional CD47 protein is increased by exchanging an endogenous promoter for (i) a constitutive promoter or (ii) an inducible promoter.

51. The method of any one of claims 34 to 50, wherein the cell surface expression of a functional CD47 protein is increased by introducing a CD47 transgene under the control of an inducible or constitutive promoter.

52. The method of any one of claims 34, 35, or 37 to 51, wherein the hypoimmunogenic glial cell or dopaminergic neuron is a human cell.