CLAIMS

1. A method of producing a plurality of cells, comprising

culturing eye field progenitor cells, as cell clusters and under low adherence or non-adherent conditions, in a cell media for a period of time sufficient for the cell clusters to form a plurality of cells, wherein the eye field progenitor cells are capable of differentiating into retinal ganglion progenitor cells in the cell media, and wherein the cell media comprises forskolin, BDNF, and/or CNTF,

wherein the plurality of cells express: one or more of Math5, Brn3a, Brn3b, Isl1, Neurofilament, and Thy1,

wherein the eye field progenitor cells are characterized as Pax6(+), Rx1(+), Oct4(-) and Nanog(-), and preferably are also characterized as Six3(+), Six6(+), Lhx2(+), Tbx3(+), Sox2(+), Otx2(+) and Nestin(+), as determined by immunostaining and/or flow cytometry.

2. The method of claim 1, further comprising culturing pluripotent stem cells under feeder-free conditions to produce the eye field progenitor cells.

3. The method of claim 1 or 2, further comprising producing a plurality of cells by culturing the cells in a retinal ganglion cell (RGC) differentiation medium.

4. The method of claim 3, wherein the plurality of cells express: one or more of Brn3a, Neurofilament, Tuj1, and Thy1.

5. A composition comprising a plurality of cells produced according to the method of any one of claims 1-4.

6. A composition of cells, comprising a plurality of cells at least 60% of which express

(i) one or more of Brn3a, Neurofilament, and Thyl, or

(ii) one or more of Math5, Brn3a, Brn3b, and Isl1, as determined immunocytochemically, and wherein the plurality of cells are formed as neurospheres.

7. The composition of claim 6(ii),

(a) further comprising a medium suitable for maintaining the viability of the cells, or

(b) wherein the composition is substantially free of pluripotent stem cells, mature photoreceptors, and/or amacrine cells.

8. The composition of claim 6, wherein the composition is a pharmaceutical preparation that is suitable for use in a mammalian patient, and further comprises a pharmaceutically acceptable carrier for maintaining the viability of the cells for transplantation into a mammalian patient.

9. The composition of claim 6, wherein the composition is a cryogenic cell preparation, and optionally wherein at least 80% of the cell number initially frozen are recovered after thawing.

10. The composition of any one of claims 6-9, wherein the plurality of cells is derived from a pluripotent stem cell *in vitro*.

11. The composition of claim 6(ii), wherein at least 50% of the cells in plurality express

(1) Math5 and Brn3a,

(2) Math5, Brn3a and Brn3b, or

(3) Math5, Brn3a, Brn3b and Isl1,

as determined immunocytochemically.

12. The composition of claim 6(i), wherein at least 50% of the cells in plurality express

(1) Brn3a and Neurofilament,

(2) Brn3a and Tuj 1,

(3) Brn3a, Tuj1 and Neurofilament, or

(4) Brn3a, Tuj1 and Thy1

as determined immunocytochemically.

13. The composition of any one of claims 6-12, wherein at least 75%, 85%, 95% or 99% of the cells in plurality express

(i) one or more of Brn3a, Neurofilament, Tuj1, and Thyl, or

(ii) one or more of Math5, Brn3a, Brn3b, Isl1, Neurofilament, and Thy1,

as determined immunocytochemically.

14. The composition of any one of claims 5-13, comprising the composition to be administered to a mammalian patient, or the composition to be administered after thawing to a mammalian patient.