

WHAT IS CLAIMED IS:

1. Use of human retinal pigment epithelium (RPE) cells in the preparation of a pharmaceutical composition for treating a subject with dry-form age-related macular degeneration (AMD), wherein at least 95% of the cells thereof co-express premelanosome protein (PMEL17) and **cellular retinaldehyde binding protein** (CRALBP), wherein the pharmaceutical composition is suitable for administering into the subretina of the subject, wherein the trans-epithelial electrical resistance of the cells is greater than 100 ohms to the subject, thereby treating the subject.
2. Use of human polygonal retinal pigment epithelium (RPE) cells in the preparation of a pharmaceutical composition for treating a subject with a retinal disease or condition, wherein at least 95% of the cells thereof co-express premelanosome protein (PMEL17) and **cellular retinaldehyde binding protein** (CRALBP), wherein the pharmaceutical composition is suitable for administering into the retina of the subject, wherein the trans-epithelial electrical resistance of the cells is greater than 100 ohms to the subject, wherein the pharmaceutical composition comprises between 50,000 - 5,000,000 cells per administration, thereby treating the subject.
3. Use of human retinal pigment epithelium (RPE) cells in the preparation of a pharmaceutical composition for treating a subject with a retinal disease or condition, wherein the pharmaceutical composition is suitable for being administered into the retina of the subject using a device, wherein the outer diameter of the device through which the cells are administered is between 90-100 μm , thereby treating the subject.

4. The use of claim 3, wherein at least 95% of the cells thereof co-express premelanosome protein (PMEL17) and **cellular retinaldehyde binding protein** (CRALBP), wherein the trans-epithelial electrical resistance of the cells is greater than 100 ohms to the subject.

5. The use of claim 1, wherein the pharmaceutical composition comprises between 50,000- 1,000,000 cells per administration.

6. The use of claim 2, wherein the pharmaceutical composition comprises 500 cells per μl – 10,000 cells per μl .

7. The use of claim 2, wherein said retinal disease or condition is selected from the group consisting of retinitis pigmentosa, retinal detachment, retinal dysplasia, retinal atrophy, retinopathy, macular dystrophy, cone dystrophy, cone-rod dystrophy, Malattia Leventinese, Doyme honeycomb dystrophy, Sorsby's dystrophy, pattern/butterfly dystrophies, Best vitelliform dystrophy, North Carolina dystrophy, central areolar choroidal dystrophy, angioid streaks, toxic maculopathy, Stargardt disease, pathologic myopia, retinitis pigmentosa, and macular degeneration.

8. The use of claim 7, wherein said disease is age-related macular degeneration.

9. The use of claim 1, wherein the subject fulfils at least one of the criteria selected from the group consisting of:

(i) is aged 55 or older;

(ii) has funduscopy findings of dry AMD with geographic atrophy in the macula, above 0.5 disc area in at least one eye;

(iii) is able to undergo a vitreoretinal surgical procedure under monitored anesthesia care;
and

(iv) does not have an immunodeficiency disease.

10. The use of claim 1, wherein the number of Oct4⁺TRA-1-60⁺ cells in the population is below 1:250,000.

11. The use of claim 1, wherein at least 80% of the cells express Bestrophin 1, as measured by immunostaining and/or wherein at least 80% of the cells express Microphthalmia-associated transcription factor (MITF), as measured by immunostaining and/or wherein 80% of the cells express paired box gene 6 (PAX-6) as measured by FACS.

12. The use of claim 1, wherein the cells secrete greater than 500 ng of Pigment epithelium-derived factor (PEDF) per ml per day and/or the cells secrete PEDF and vascular endothelial growth factor (VEGF) in a polarized manner.

13. The use of claim 12, wherein the ratio of apical secretion of PEDF: basal secretion of PEDF is greater than 1.

14. The use of claim 13, wherein said ratio remains greater than 1 following incubation for 8 hours at 2-8°C.

15. The use of claim 1, wherein said trans-epithelial electrical resistance of the cells remains greater than 100 ohms following incubation for 8 hours at 2-8°C.

16. The use of claim 12, wherein the ratio of basal secretion of VEGF: apical secretion of VEGF is greater than 1.

17. The use of claim 1, wherein the cells are capable of rescuing visual acuity in the RCS rat following subretinal administration.

18. The use of claim 1, wherein the cells are generated by ex-vivo differentiation of human embryonic stem cells.

19. The use of claim 1, wherein the cells are generated by:

(a) culturing human embryonic stem cells or induced pluripotent stem cells in a medium comprising nicotinamide so as to generate differentiating cells, wherein said medium is devoid of activin A;

(b) culturing said differentiating cells in a medium comprising nicotinamide and activin A to generate cells which are further differentiated towards the RPE lineage; and

(c) culturing said cells which are further differentiated towards the RPE lineage in a medium comprising nicotinamide, wherein said medium is devoid of activin A.

20. The use of claim 19, wherein said embryonic stem cells or induced pluripotent stem cells are propagated in a medium comprising bFGF and TGF β .