Claims

1. A method for culturing isolated corneal endothelial cells comprising the steps of:

(i) contacting isolated corneal endothelial cells which have not been transformed to immortalized cells with a maintenance medium comprising Human Endothelial-Serum Free Medium (Human Endothelial-SFM) to stabilize the corneal endothelial cells;

(ii) contacting the isolated stabilized corneal endothelial cells with a proliferative medium to propagate and/or expand corneal endothelial cells; and

(iii) contacting the propagated and/or expanded corneal endothelial cells with said maintenance medium to substantially preserve the morphology and characteristics of the corneal endothelial cells.

2. The method according to claim 1, wherein step (ii) comprises culturing the isolated corneal endothelial cells in the proliferative medium.

3. The method according to claim 1 or 2, wherein step (iii) is performed before the isolated corneal endothelial cells differentiate or change morphology and/or characteristics.

4. The method according to any one of the preceding claims wherein step (iii) comprises replacing the proliferative medium with the maintenance medium.

5. The method according to any one of the preceding claims wherein step (iii) comprises culturing the propagated and/or expanded corneal endothelial cells in the maintenance medium.

6. The method according to any one of claims 1 to 4, wherein step (iii) comprises passaging the propagated and/or expanded corneal endothelial cells in the maintenance medium.

7. The method according to any one of the preceding claims, wherein the proliferative medium comprises a supplemented basal medium.

8. The method according to any one of the preceding claims, wherein the proliferative medium comprises a basal medium supplemented with serum.

9. The method according to any one of the preceding claims, wherein the proliferative medium comprises a basal medium supplemented with at least 2% serum.

10. The method according to any one of the preceding claims, wherein the proliferative medium comprises a basal medium supplemented with 5% serum.

11. The method according to any one of claims 7 to 10, wherein the proliferative medium comprises a basal medium supplemented with at least one supplement selected from the group consisting of amino acids, antimicrobials, cholera toxin, chondroitin, Dimethyl sulphoxide (DMSO), Endothelial Cell Growth Supplement (ECGS), growth factors, insulin, steroids, minerals, pituitary extract, transferrin and vitamins.

12. The method according to any one of the preceding claims, wherein the maintenance medium comprises a basal medium.

13. The method according to claim 12, wherein the maintenance medium comprises a basal medium supplemented with serum.

14. The method according to claim 13, wherein the maintenance medium comprises a basal medium supplemented with at least 2% serum.

15. The method according to claim 13 or 14, wherein maintenance medium comprises a basal medium supplemented with 2.5% or 5% serum.

16. The method according to any one of the preceding claims, wherein maintenance medium is supplemented with at least one antimicrobial.

~~17. The method according to any one of the preceding claims, wherein the maintenance medium or basal medium comprises Human Endothelial-Serum Free Medium (Human Endothelial-SFM).~~

~~18. An isolated population of corneal endothelial cells prepared/preparable by a method according to any one of claims 1 to 17.~~

~~19. A combination comprising:~~

~~a proliferative medium comprising a supplemented basal medium to propagate and/or expand corneal endothelial cells; and~~

~~a maintenance medium comprising a basal medium to substantially preserve the morphology and characteristics of the corneal endothelial cells~~

~~20. The combination according to claim 19, wherein the proliferative medium comprises a basal medium supplemented with serum.~~

~~21. The combination according to claim 19 or 20, wherein the proliferative medium comprises a basal medium supplemented with at least 2% serum.~~

~~22. The combination according to any one of claims 19 to 20, wherein the proliferative medium comprises 5% serum.~~

~~23. The combination according to any one of claims 19 to 22, wherein the proliferative medium comprises a basal medium supplemented with at least one supplement selected from the group consisting of amino acids, antimicrobials, cholera toxin, chondroitin, Dimethyl sulphoxide (DMSO)~~

~~Endothelial Cell Growth Supplement (ECGS), growth factors, insulin, steroids, minerals, pituitary extract, transferrin and vitamins.~~

~~24. The combination according to any one of claims 19 to 23, wherein the maintenance medium comprises a basal medium.~~

~~25. The combination according to any one of claims 19 to 24, wherein the maintenance medium comprises a basal medium supplemented with serum.~~

~~26. The combination according to any one of claims 19 to 25, wherein the maintenance medium comprises a basal medium supplemented with at least 2% serum.~~

~~27. The combination according to any one of claims 19 to 26, wherein the maintenance medium comprises a basal medium supplemented with 2.5% or 5% serum.~~

~~28. The combination according to any one of claims 19 to 27, wherein the maintenance medium is supplemented with at least one antimicrobial.~~

~~29. The combination according to any one of claims 19 to 28, wherein the maintenance medium or basal medium comprises Human Endothelial-Serum Free Medium (Human Endothelial-SFM).~~

~~30. A maintenance medium for substantially preserving the morphology and/or characteristic of an isolated population of corneal endothelial cells subsequent to expansion and/or propagation of the corneal endothelial cells with a proliferative medium.~~

~~31. The maintenance medium according to claim 30, comprising a basal medium.~~

~~32. The maintenance medium according to 30 or 31, comprising a basal medium supplemented with serum.~~

~~33. The maintenance medium according to 32, comprising a basal medium supplemented with at least 2% serum.~~

~~34. The maintenance medium according to 32 or 33, comprising a basal medium supplemented with 2.5% or 5% serum.~~

~~35. The maintenance medium according to any one of claims 30 to 34, wherein the maintenance medium is supplemented with at least one~~

~~36. The maintenance medium according to any one of claims 30 to 35, wherein the maintenance medium or basal medium comprises Human Endothelial-Serum Free Medium (Human Endothelial-SFM).~~