Claims

1. A production method of a cell aggregate comprising an anterior eye segment tissue or a partial structure thereof, or a precursor tissue thereof, comprising culturing an aggregate of pluripotent stem cells in suspension in a medium free of pattern formation factors excluding bone morphogenic factor signal transduction pathway activating substance in the presence of a bone morphogenic factor signal transduction pathway activating substance,
wherein the aggregate of pluripotent stem cells is cultured in suspension in the absence of a bone morphogenic factor signal transduction pathway activating substance, prior to the suspension culture in the presence of a bone morphogenic factor signal transduction pathway activating substance, and
wherein the anterior eye segment tissue is cornea and/or lens.

2. The method according to claim 1, wherein the bone morphogenic factor signal transduction pathway activating substance is BMP4.

3. The method according to claim 2, wherein BMP4 has a concentration of 1 - 5 nM.

4. The production method according to any one of claims 1 to 3, wherein the suspension culture is performed entirely or partially in the presence of a fibroblast growth factor.

5. The method according to any one of claims 1 to 4, wherein the pluripotent stem cells are embryonic stem cells or induced pluripotent stem cells.

6. The method according to any one of claims 1 to 5, wherein the pluripotent stem cells are derived from human.

7. The method according to any one of claims 1 to 6, wherein the suspension culture is performed in the absence of a feeder cell.

8. The method according to any one of claims 1 to 7, wherein the cell aggregate further comprises a neural retinal tissue.

9. The method according to any one of claims 1 to 8, wherein the cell aggregate comprises corneal epithelium as a partial structure of the anterior eye segment tissue, and further comprises a mesenchymal tissue, or corneal stroma and/or corneal endothelium derived therefrom.

10. The method according to claim 9, wherein the corneal epithelium is stratified.

11. The method according to any one of claims 1 to 10, further comprising separating the anterior eye segment tissue or partial structure thereof or precursor tissue thereof from the cell aggregate.

12. The method according to claim 11, wherein the anterior eye segment tissue or partial structure thereof, or precursor tissue thereof is separated together with a neural retinal tissue.

13. A cell aggregate obtained by the method according to any one of claims 1 to 10, wherein a nonneural ectodermal epithelial tissue is formed on the outside of a neural retina in the cell aggregate.

14. A cell aggregate obtained by the method according to any one of claims 1 to 12, which comprises an anterior eye segment tissue or a partial structure thereof, or a precursor tissue thereof constituting the surface layer of the cell aggregate,

and a neural retinal tissue in the inside of the cell aggregate, wherein the anterior eye segment tissue or a partial structure thereof, or a precursor tissue thereof is adjacent to the neural retinal tissue.