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Stem cell in form deprivation myopia (FDM) mice

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Sclera is a supportive framework of outer coat on the eyeball, with quiescence sclera cell residents between fibrous layers. Previous studies indicated sclera mesenchymal stem cell express the stem cell surface markers of Sca1, CD90.2, CD44, CD105, and CD73 but negative for the hematopoietic markers. Mouse sclera stem cells highly express the cell surface marker of CD44 (98%). CD44 is a cell-surface glycoprotein involved in cell-cell interactions, cell adhesion, and migration. Since mice sclera highly express CD44 positive stem cell, we hypothesis CD44 positive stem cell in sclera is one of the factors to correlate with axial growth or form deprivation myopia (FDM). The axial growth or form deprivation myopia (FDM) mouse model is well established at 2008. This model was used to induce myopia of C57BL/6 mice at right eye and we took left eye for the internal control. Twenty-three days old C57BL/6 mice were covered at the right eyes until twenty-eight days to induce FDM and the left eyes were taken for the internal control in 22 mice. The number and function of stem cell between right and left sclera were analyzed between right and left sclera to study the correlation of stem cell and myopia.

Our data indicated that the increased axial length due to FDM induction is negative correlated with 1) the number of stem cell in eyes are significantly decrease in FDM eyes; 2) the ALP acitivty of stem cell in FDM eye are decrased and 3) the differentiation abilities of stem cell toward osteogenic and chondrogenic differentiation are also decreased.

Biography

Ching-Hua Yeh has completed his Ph.D. at the age of 40 years from Kaohsiung Medical University and postdoctoral studies from University of Virgina. She is the postdoctor of Department of Genome Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan. She has published more than 9 papers in reputed journals and will publish the other two papers on JBJS and the Journal of Fertility & Sterility.

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