



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Oscar Calzada	Project Number S0404
Project Title The Effect of TGF-beta Stimulation on Retinal Pigment Epithelium Cell Transformation	
Abstract Objectives/Goals Retinal pigment epithelium (RPE) cells are located outside the neuro-sensory retina that nourishes photoreceptor cells in the human eye. Transformed RPE plays an important role in the pathogenesis of proliferative vitreoretinopathy (PVR). Smooth-Muscle Actin (SMA) is a critical marker for RPE transdifferentiation and we hope to elucidate the factors that cause and are involved in RPE cell transformation. Methods/Materials A cell culture of retinal pigment epithelium cells from human fetal eye is grown continuously in the lab. After pre-treating RPE cells with Transforming Growth Factor-beta (TGF-beta) and 5AZA (DNA methylation inhibitor), we performed RNA isolation, followed by reverse transcription, Real-time Polymerase Chain Reaction (Real-time PCR), using SMA specific primer. Results Compared to our control, TGF-beta pre-treated cells see a fold-increase in RNA levels of SMA, whereas 5AZA pre-treated cells see a fold-decrease in the expression of SMA mRNA. Conclusions/Discussion Stimulating RPE cells with TGF-beta can increase SMA RNA expression, while treatment of RPE cells with 5AZA, inhibits SMA mRNA expression.	
Summary Statement To determine the role played by TGF-beta protein in retinal pigment epithelium (RPE) cell transformation and its regulation by 5-AZA.	
Help Received Used lab equipment at the Doheny Vision and Research Center of the University of Southern California under the supervision of Dr. Shikun He; Participant in the Science Technology and Research (STAR II) internship program.	