

Immunogold Labeling of Human Cornea Fibroblasts for Use with Optical Coherence Microscopy

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The overarching goal of the project is to engineer an artificial cornea for transplant. Cornea tissue is made of mostly collagen with a few corneal keratocyte cells, which have three phenotypes. The normal state is a quiescent keratocyte, which is transparent, and the repair fibroblasts and myofibroblasts are not transparent. The repair and myo phenotypes express when a cornea is wounded. Because the keratocyte phenotype affects the transparency of a cornea, it is essential to know which phenotype is being expressed. The repair fibroblasts and myofibroblasts express an $\alpha_5\beta_1$ integrin on their surfaces and the quiescent keratocyte does not. Immunogold labeling could be used to label these phenotypes with gold nanoparticles which should either scatter or move enough to be visible using an optical coherence microscope (OCM).

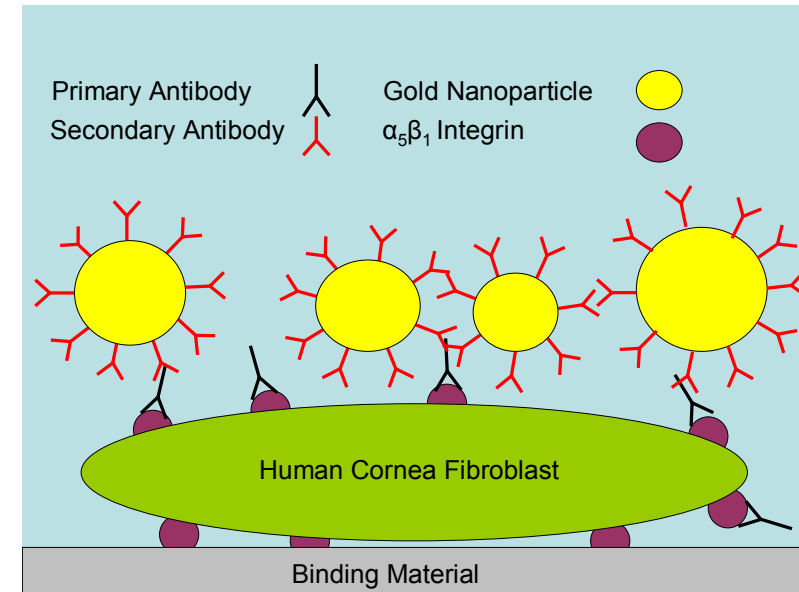


Figure 1: An overview of the immunogold labeling process. A human corneal fibroblast expresses integrins all over its surface. The primary antibody binds to the integrins. When gold particles that are conjugated to secondary antibodies are added, the antibodies bind to one another. The gold particles can then be observed in the OCM either by their scattering power or by their diffusive motion.