Development of Stem Cells in the Eye

Understanding development of the eye is very important for understanding diseases of the eye. We study the retina of the eye, which is the location of many degenerative disorders associated with vision loss. The retina is a thin layer of tissue in the eye that is comprised of cells that detect light and convert it to a signal that the brain can interpret. As the retina starts to develop it consists largely of stem cells. These stem cells divide many times to create the large number of cells needed for a complete retina. Once the retina is near it's desired size the different cell types that make up the retina start to form from the stem cells.

I am studying a technique that allows us to detect where the stem cells are located in the retina. This allows us to separate the stem cells from the cells that have developed into mature cells. Macular degeneration is the leading cause of blindness in the world. Macular degeneration is a result of the deterioration of part of the retina. By understanding the basic mechanisms that direct the development of retinal cells we will hopefully one day be able to treat or even prevent vision loss.

This is a result of a specific layer of the retina degenerating. There are also many hereditary diseases that result in vision loss because of degeneration of a specific layer of the retina.