

## Abstract

Vertebrate retinas are not fully mature after birth, even after eye opening retinal ganglion cells continue undergo dendritic remodeling. It has been well established that visual experience has a great impact on visual system development in the brain. However, it is not certain whether visual experience exerts similar effects on the maturation of ganglion cells in the retina. Here I applied a Diolistic labeling technique to study the dark-reared effect on dendritic morphologies of ganglion cells in the developing rabbit retina. New Zealand White rabbits (p20~ p22) were reared either in the normal light-dark cycle or in the completely dark environment from birth. Ganglion cells in the whole mount retina preparation were randomly labeled with DiI-coated tungsten particles via the gene gun delivery. According to features of the dendritic pattern and stratification, each labeled neuron was assigned into a specific category of ganglion cell types as described previously. Most ganglion cell types were analyzed using the general linear model (GLM) to test the effect of light deprivation on the dendritic area. Overall, there was no significant difference in the dendritic field size between ganglion cells of the normal- and the dark-reared groups (G1, G4 OFF, G7, G9, G10, G11 OFF). Ganglion cell types which did not have enough numbers to compare also reveal the tendency that light experience does not play an important role in the ganglion cell development. Taken together, these results indicate that the influence of visual experience on morphological maturation of ganglion cells may be insignificant in the rabbit retina development. This also implies that the receptive field size of rabbit ganglion cells may mature normally without the stimulation of visual inputs.

**Key words:** retinal ganglion cells, dendritic development, light deprivation