Summary

Glaucoma is a leading cause of irreversible blindness throughout the world. World Health Organization statistics, published in 1995, indicate that glaucoma accounts for blindness in 5.1 million persons ***(Thylefors et al. ,1995).***

Examination of the optic nerve head and its surrounding retinal nerve fiber layer is considered essential in both detecting and monitoring, glaucoma. Retinal nerve fiber layer assessment has been shown to be an early indicator of glaucomatous damage, because axon loss of the retinal nerve fiber layer was found to be the earliest observable defect in glaucoma. Up to 50% of the nerve fiber may already be lost before any visual field loss can be detected. Therefore it is important to develop strategies to map the optic disc and retinal nerve fiber layer ***(Niessen et al., 1996).***

Optical coherence tomography (OCT) is one promising technology that has been developed to assess tissue thickness in vivo, such as that of the retinal Nerve fiber layer ***(Bowd et al., 2000)***. OCT permits high resolution cross-sectional imaging of biological tissue using light. OCT utilitzes interferometory and near infrared, low coherence light to achieve a resolution of approximately 10 microns in the eye. OCT enables non contact

and non invasive imaging of the optic nerve head (ONH) and nerve fiber layer ***(Hee et al., 1995).***

Macular retinal thickness, as measured by OCT, is capable of detecting glaucomatous damage and corresponds with peripapillary NFL thickness; however, peripapillary NFL thickness has higher sensitivity and specificity for the detection of VF abnormalities***(Gadi Wollstein, et al., 2004).***

SAP measurements of visual sensitivity and OCT measurements of RNFL thickness are correlated measures of the underlying populations of RGCs. Employing procedures to derive RGCs from corresponding visual field locations and RNFL sectors produced agreement between these two methods of assessing retinal neurology, both for retinae with normal populations of RGCs and for retinae with progressively decreased populations of RGCs from the neuropathy of experimental glaucoma. Thus, the results establish that when the measurements are translated to their common parameter of RGCs there is concordance between the structure and function of normal and defective vision from glaucoma ***(Ronald Harwerth, et al., 2007).***