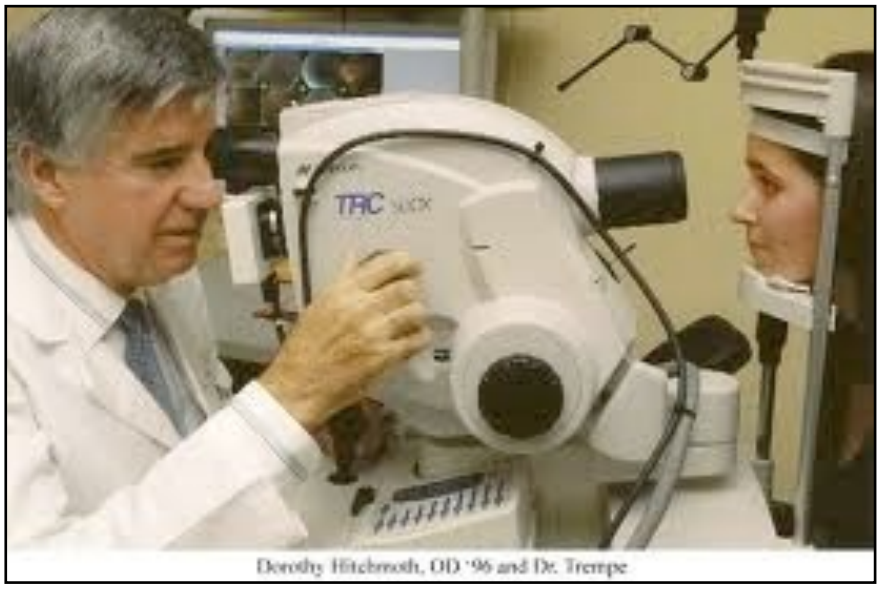
RealHealth Clinics

HEALTH INFORMATION SHEET

Measuring Brain via the Eye

OCT Maps Retinal Nerve

"Eye Retinal Nerve Corresponds Well to Structures in the Brain."



Dorothy Hitchmoth, OD '96 and Dr. Trempe

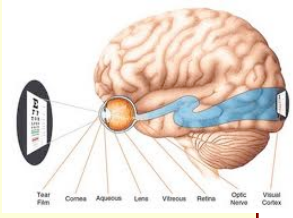
The eye is the only part of the body that provides a direct view of brain nervous system. The most precise measurement of the that tissue is provided by OCT. It is a noninvasive, non-contact imaging technology which can map retinal structures with high resolution.

Even the anatomic layers within the retina can be differentiated and retinal thickness can be measured (note the layers in the image below). These "different" layers are associated with different parts of the brain. OCT is now being used to study brain disease and correlates well with brain MRI.

Optical Tomography

Eye diseases are now best characterized using Optical Coherence Tomography (OCT). Glaucoma is an optic nerve deterioration characterized by a loss of retinal ganglion cells and their axons, the RNFL.

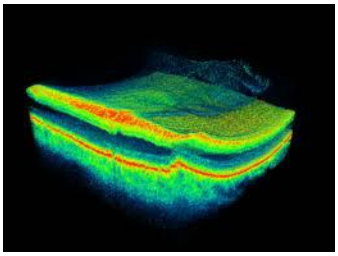
The connection between RNFL health and brain cell health is emerging. It is becoming clear that diseases that lead to the loss of optic nerve tissue also destroy brain tissue. Thus measuring the RNFL with OCT provides information on both brain AND eye health. And detectable atrophy in the RNFL occurs well before a patient has symptoms of glaucoma or Alzheimer's.



OCT measurement is a method of very early detection. **A sick eye = a sick brain.**

OCT Detect Brain Disease Before Symptoms Emerge.

The relationship between atrophy of the retina and Alzheimer's is not new and dates to 1986 in research titled "Optic nerve degeneration in Alzheimer's."



Optical Coherence Tomography provides very precise measurements of the optic nerve and the retinal nerve fiber layer. In 2009 researchers showed a very clear connection between the thickness of the RNFL and cognitive functions. Some researchers suggest "RNFL measurement has potential as a monitoring tool in AD patients."

Importantly, atrophy of the RNFL begins before a person loses apparent cognitive function. It is at this stage that Alzheimer's and related diseases are most treatable.