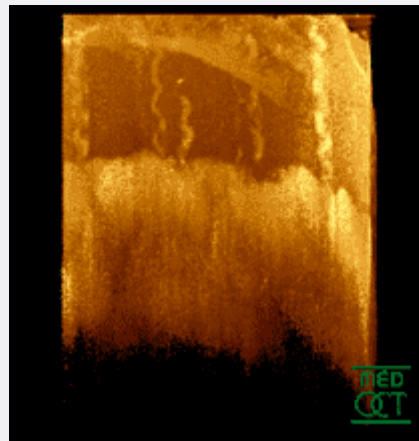


Interpretation of the OCT Image

(and some new developments)



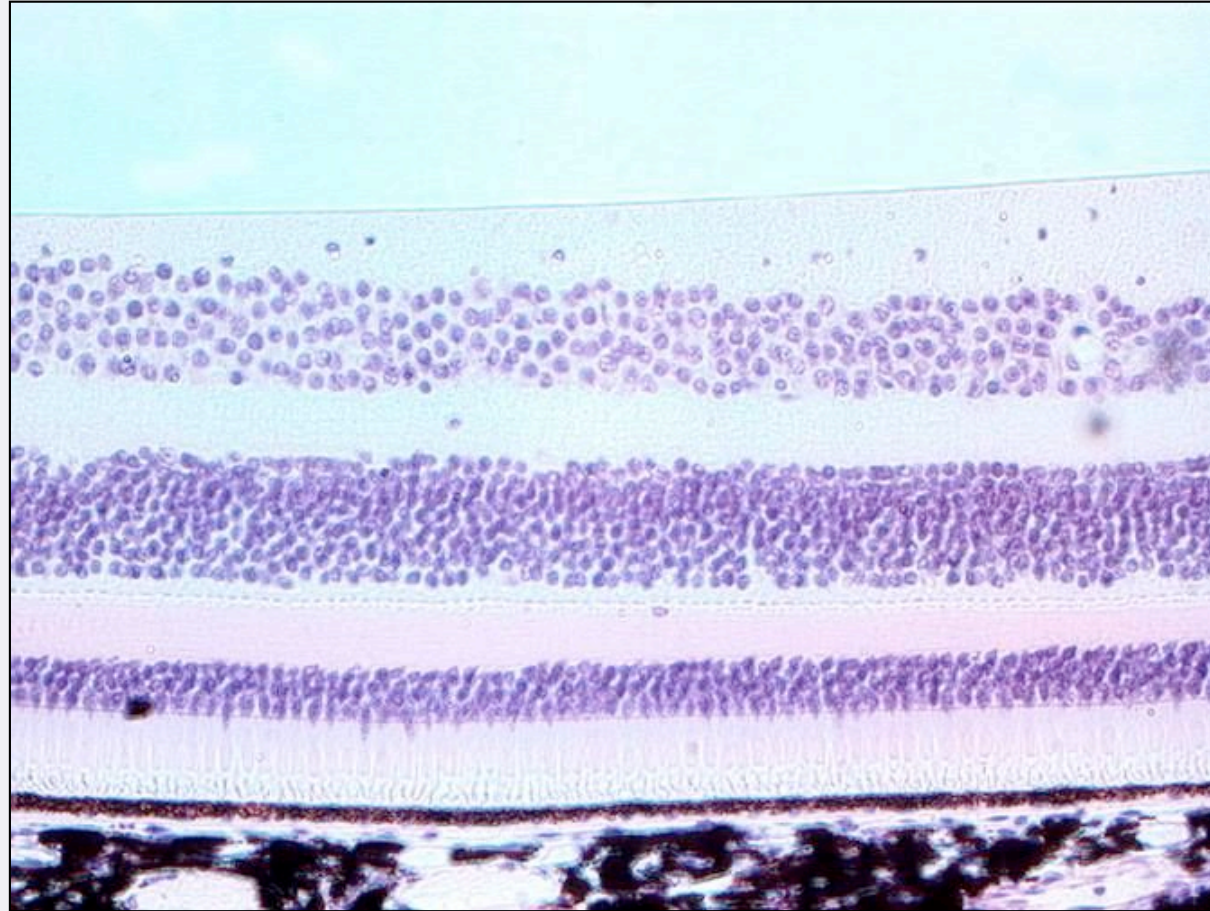
B. Jeroen Klevering

University Medical Centre Nijmegen
The Netherlands

Topics

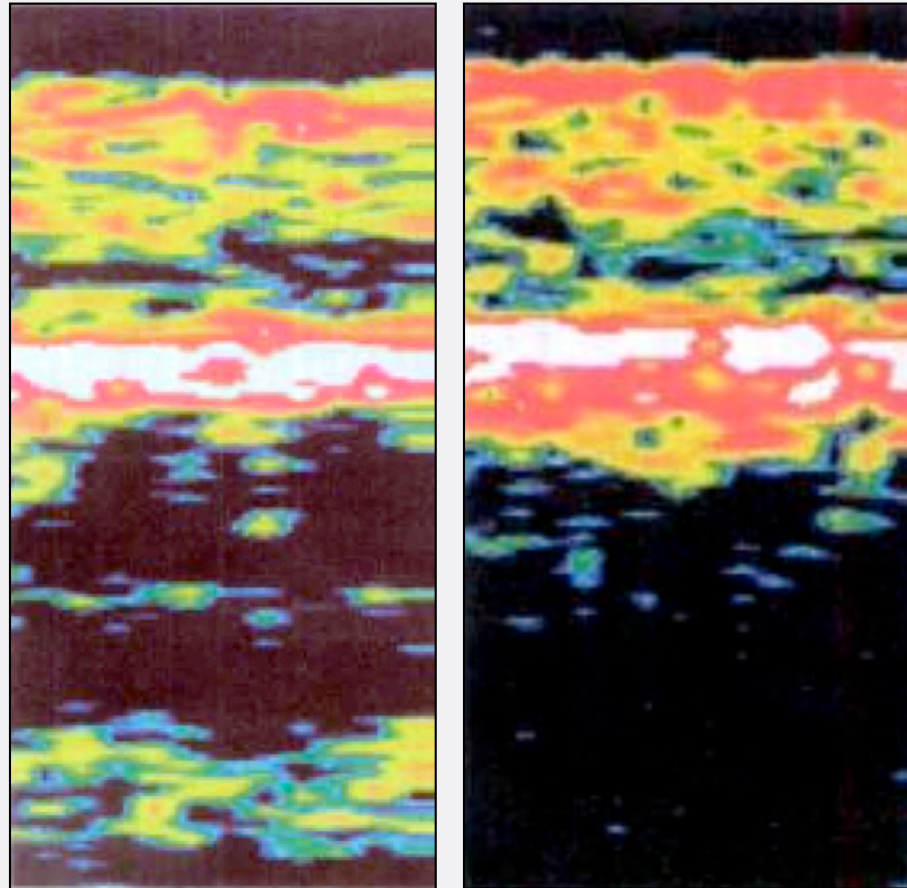
- The OCT image
 - Normal retina and key retinal pathologies
 - a. outer retina
 - b. middle retina
 - c. vitreo-retinal interface
 - New developments

Optical Coherence Tomography



This is what we wanted...

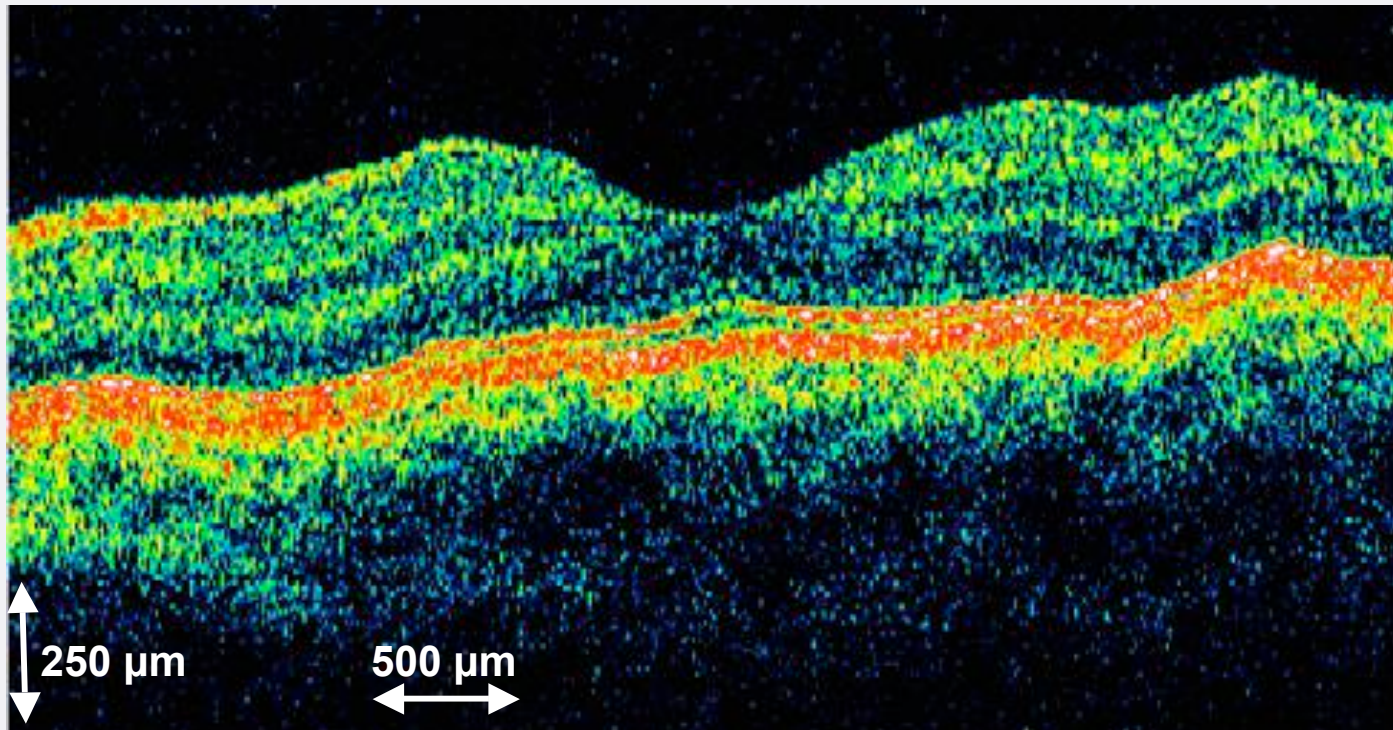
Optical Coherence Tomography



...this is what we got...

Interpretation of OCT images

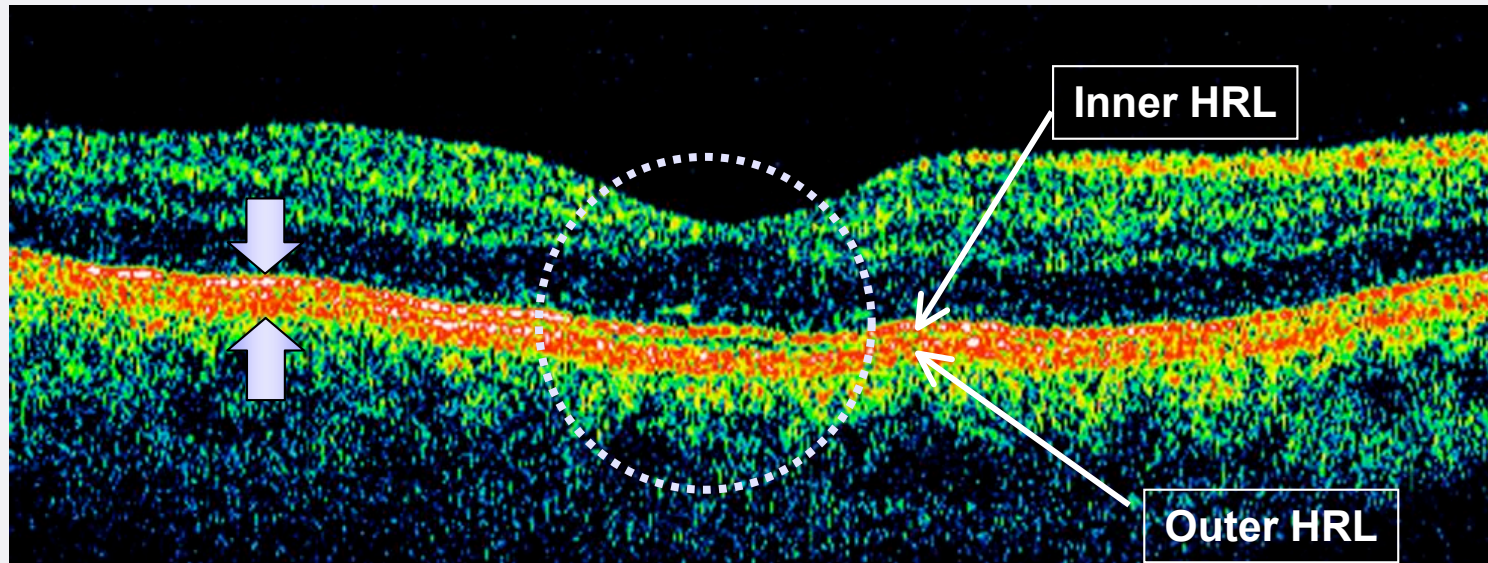
Outer retina



- The OCT image is expanded in the axial direction

Interpretation of OCT images

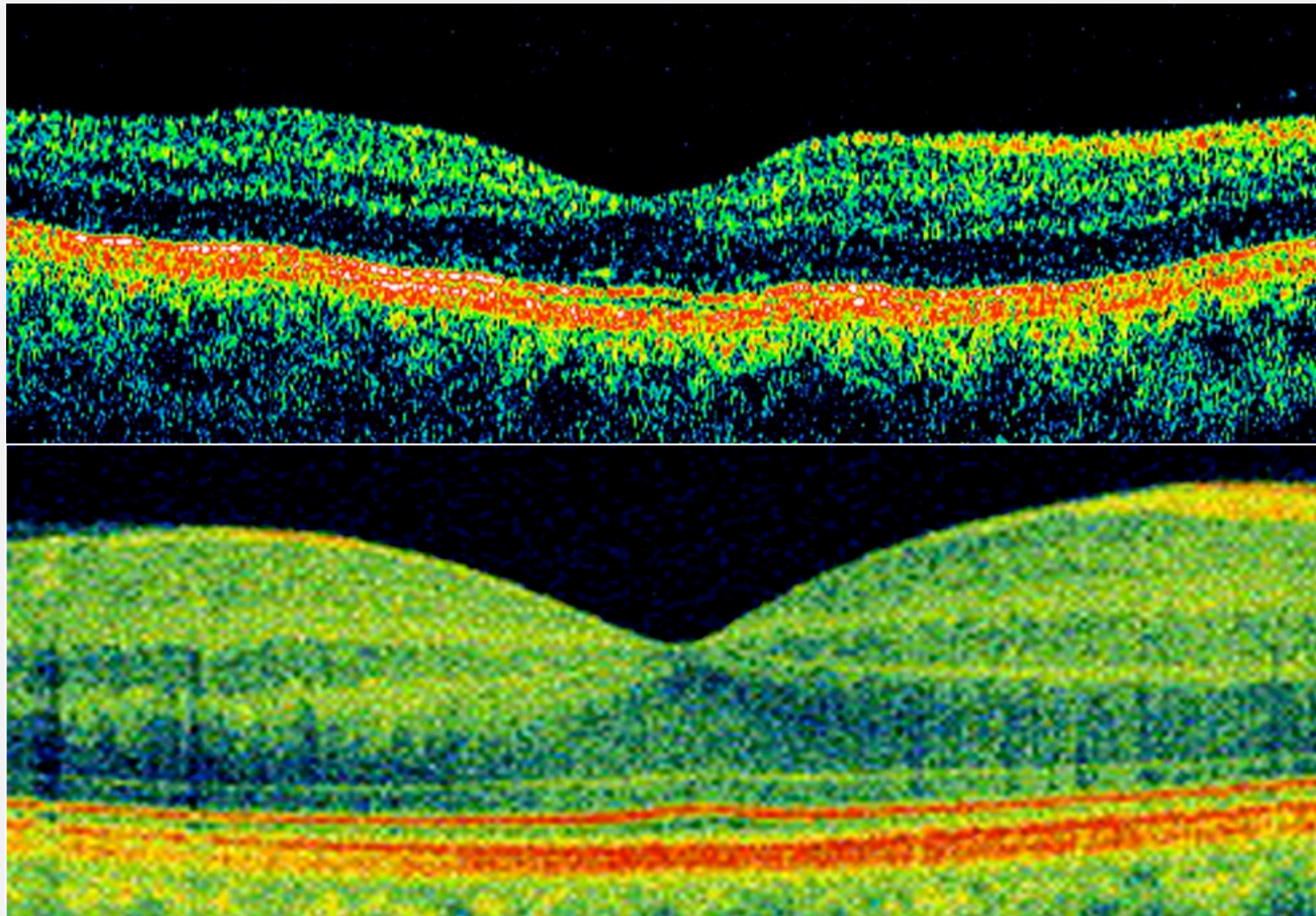
Outer retina



- Inner HRL: junction between inner and outer photoreceptor segments
- Outer HRL: retinal pigment epithelium (probably with choriocapillaris)
- Fovea:
 - absence of inner retinal layers
 - increased thickness of the photoreceptor layer

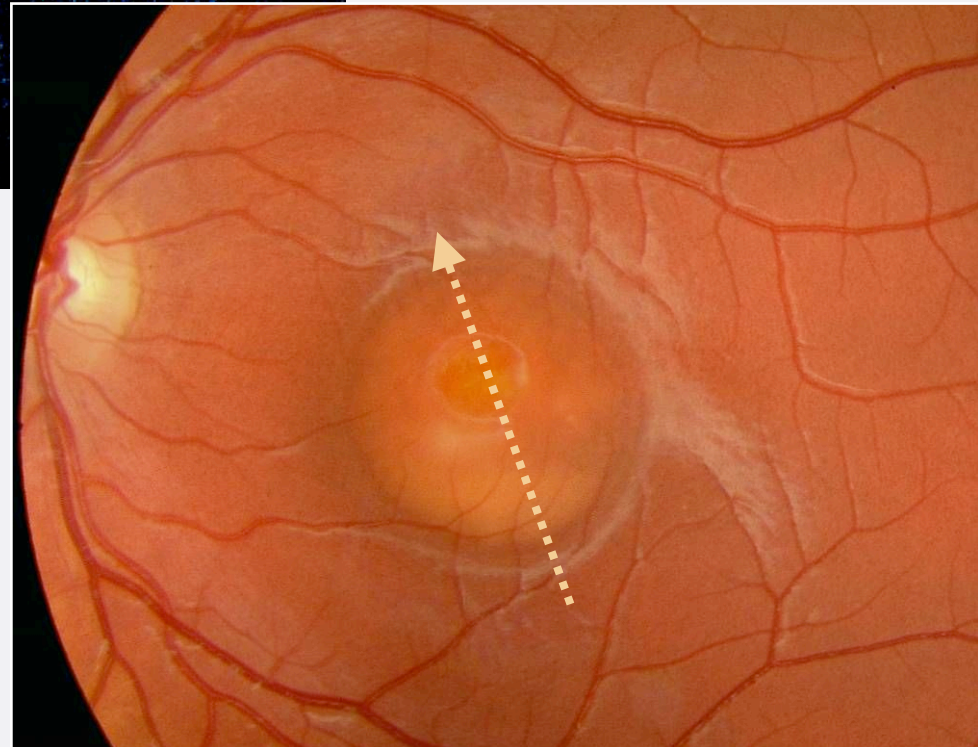
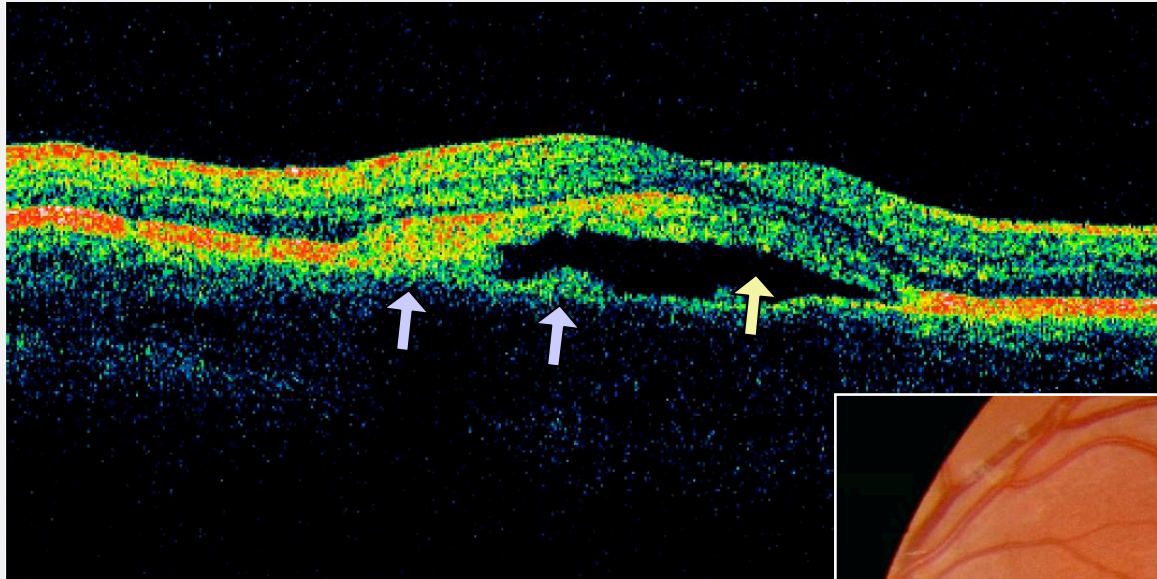
Interpretation of OCT images

Outer retina

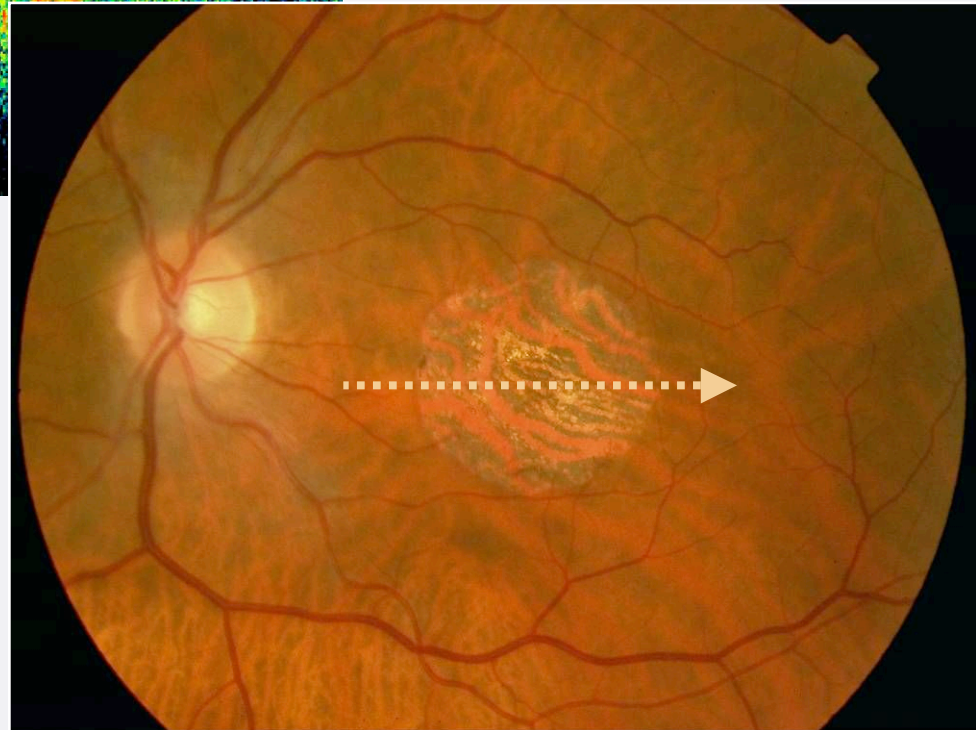
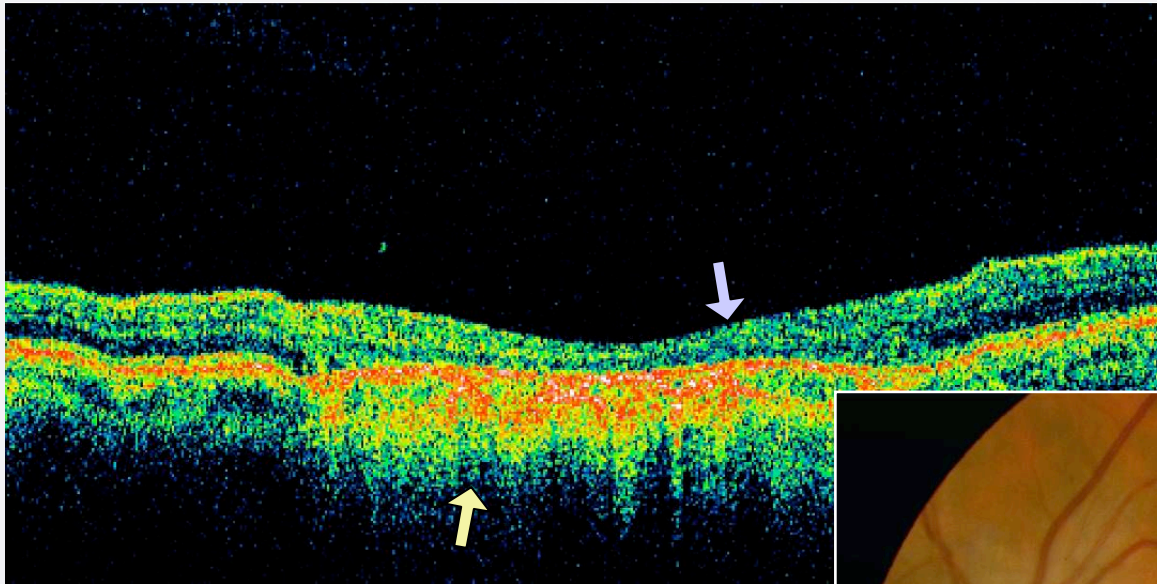


*High resolution
Spectral Domain
(Fourier
Domain OCT)*

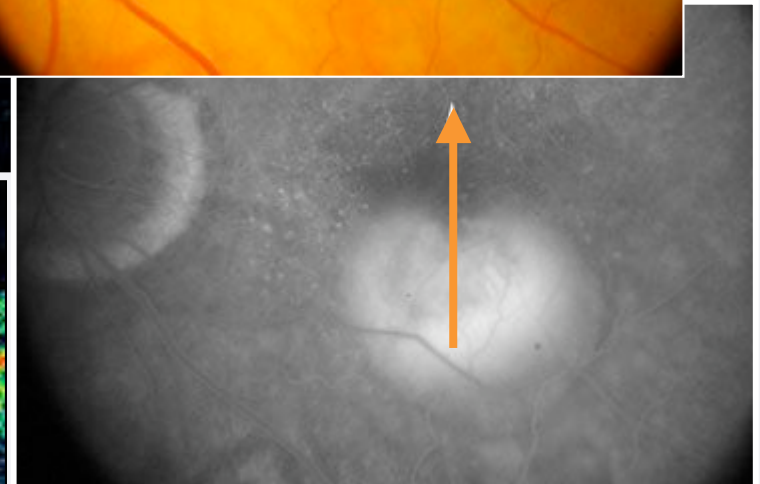
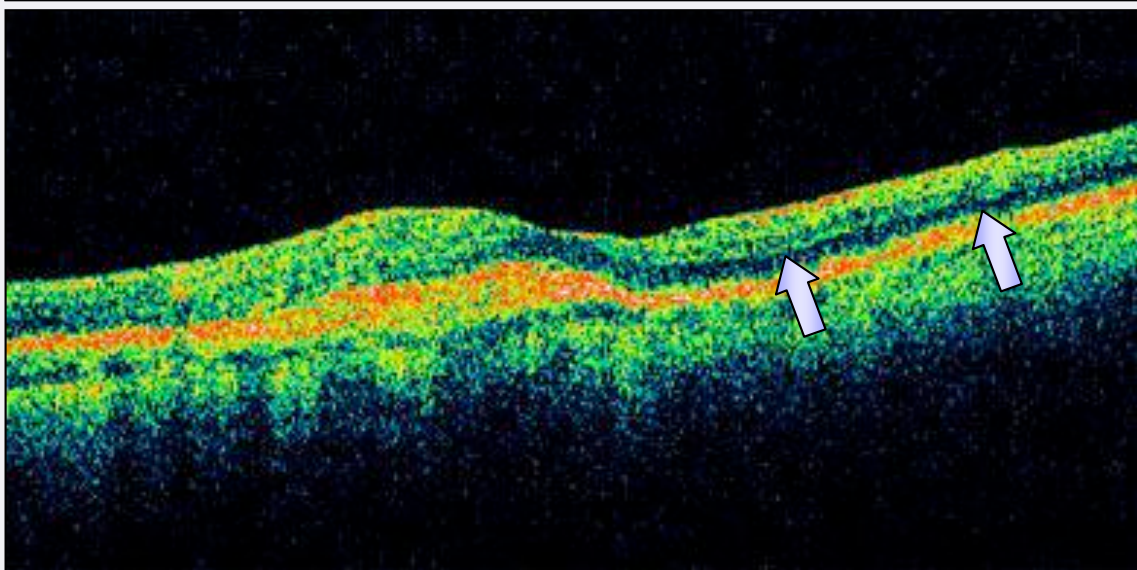
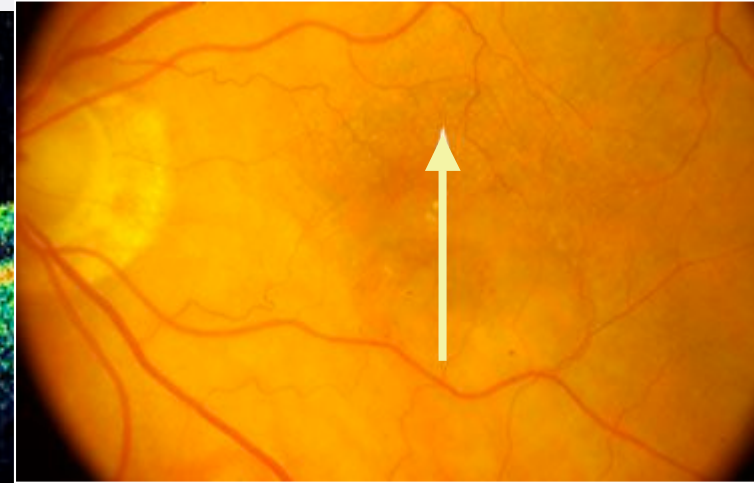
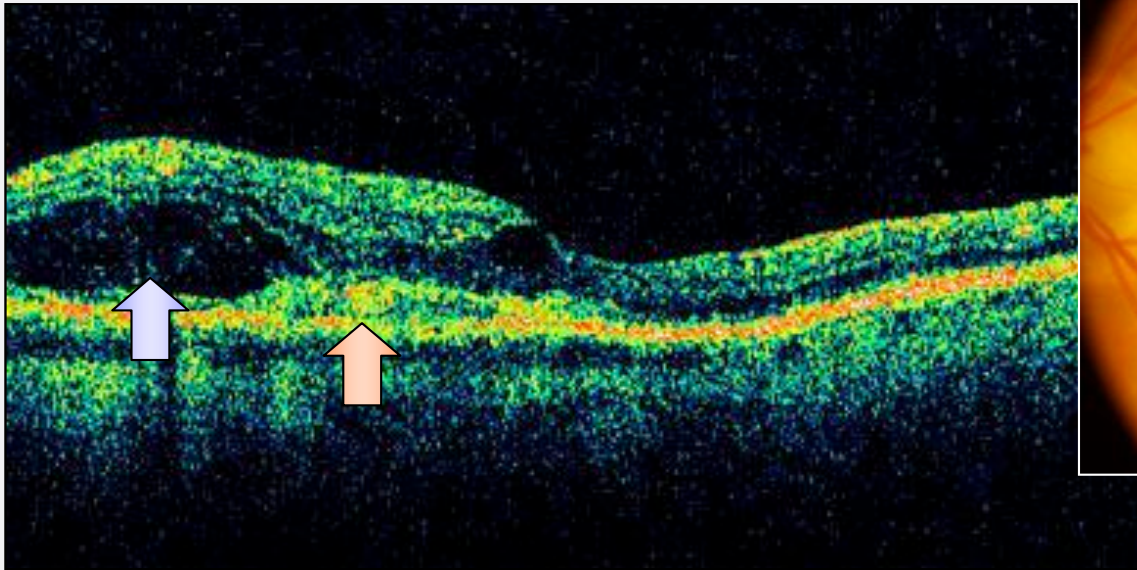
Key retinal pathologies – outer retina

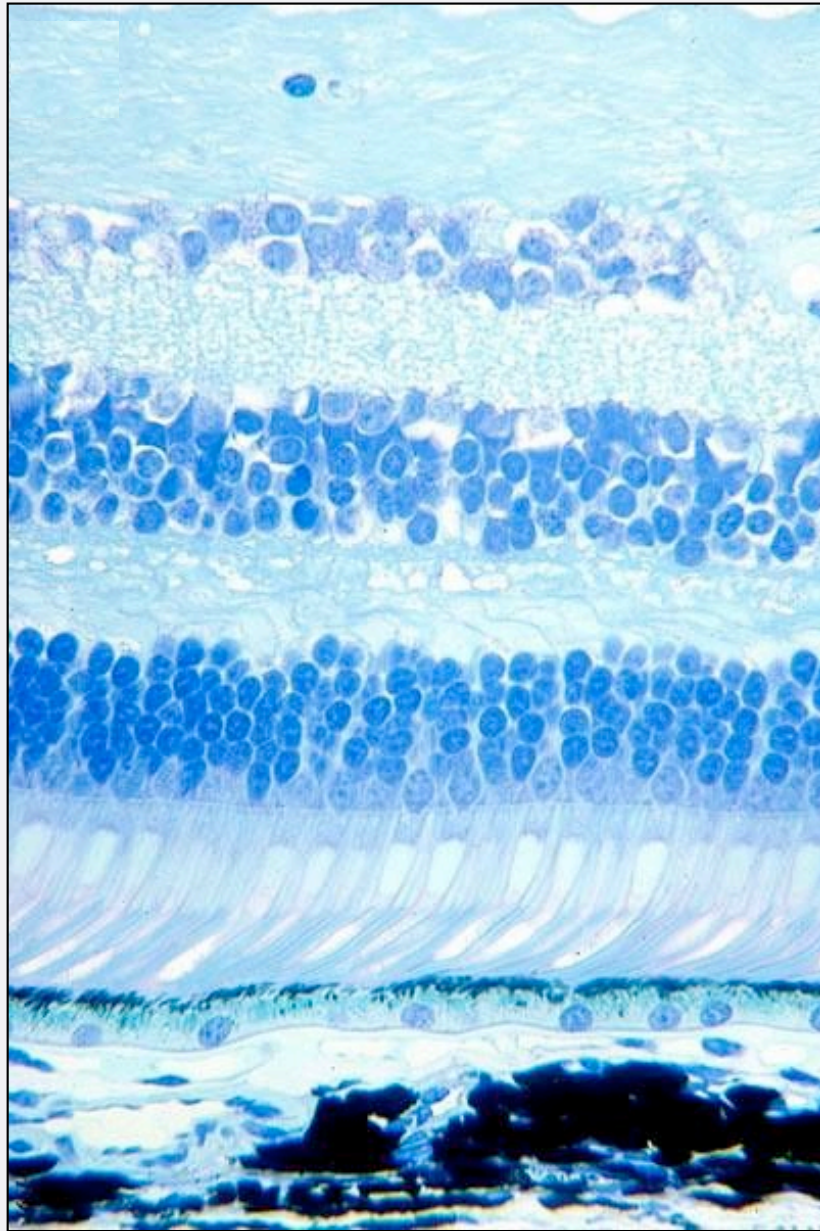


Key retinal pathologies – outer retina



Key retinal pathologies – outer retina





internal limiting membrane

nerve fiber layer

ganglion cell layer

inner plexiform layer

inner nuclear layer

outer plexiform layer

outer nuclear layer

outer limiting membrane

photoreceptor inner segments

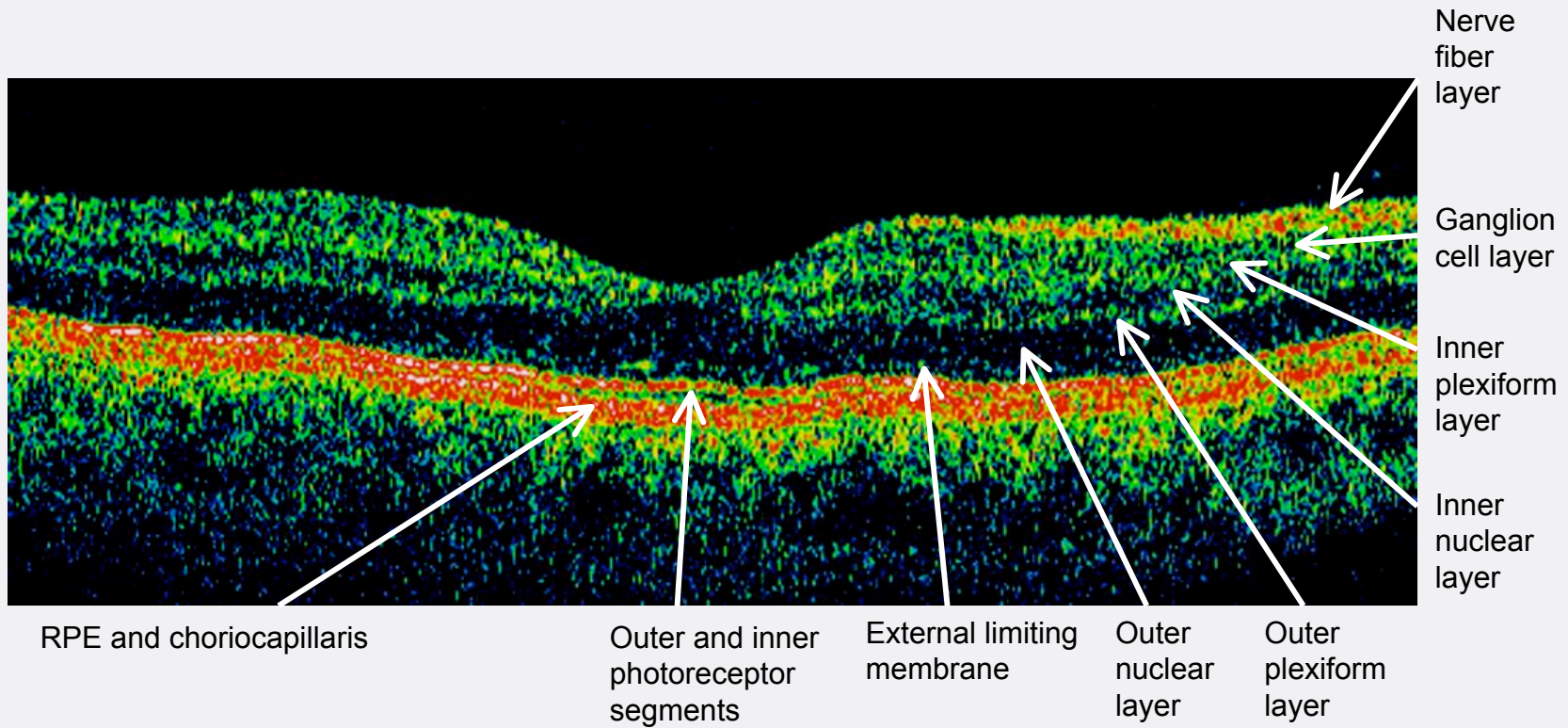
photoreceptor outer segments

retinal pigment epithelium

choriocapillaris

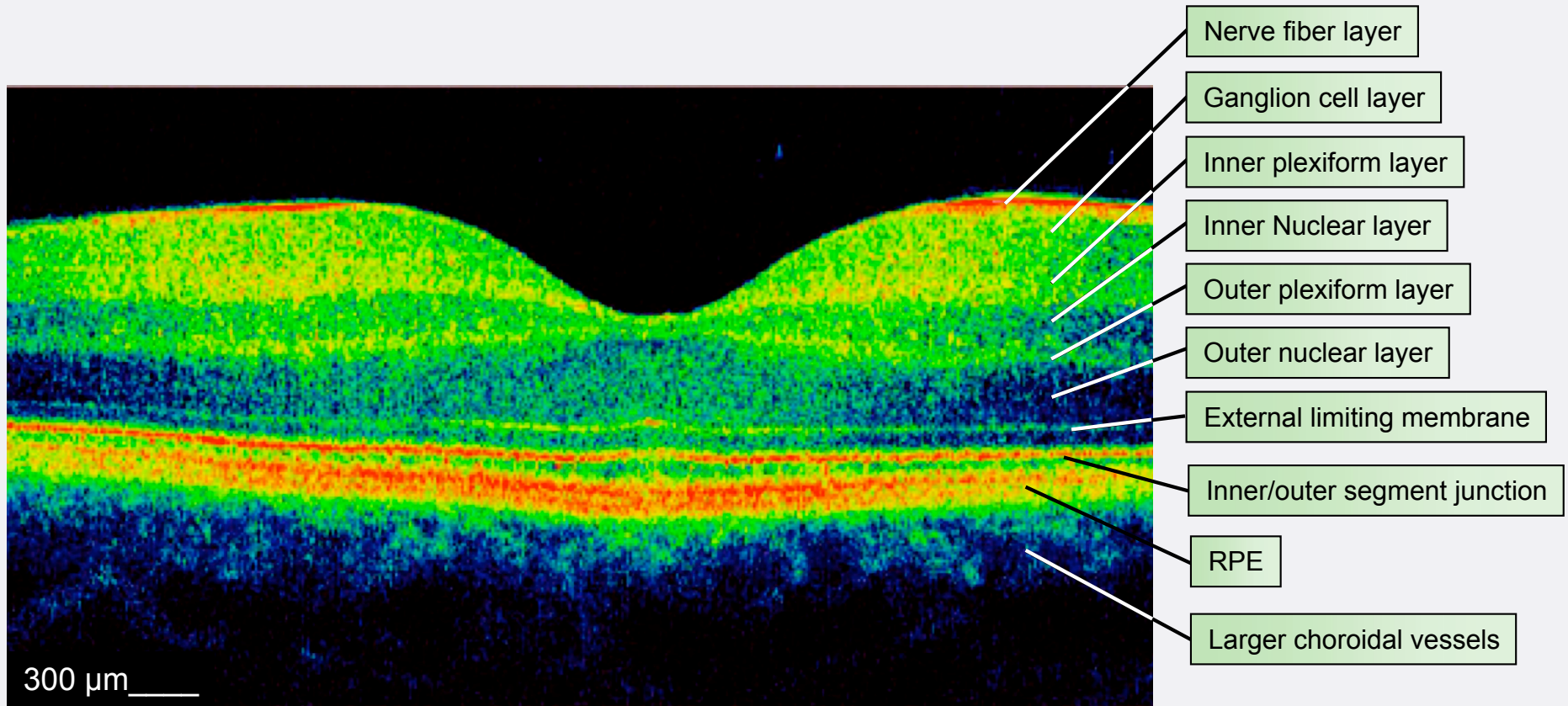
Interpretation of OCT images

Layers of the retina



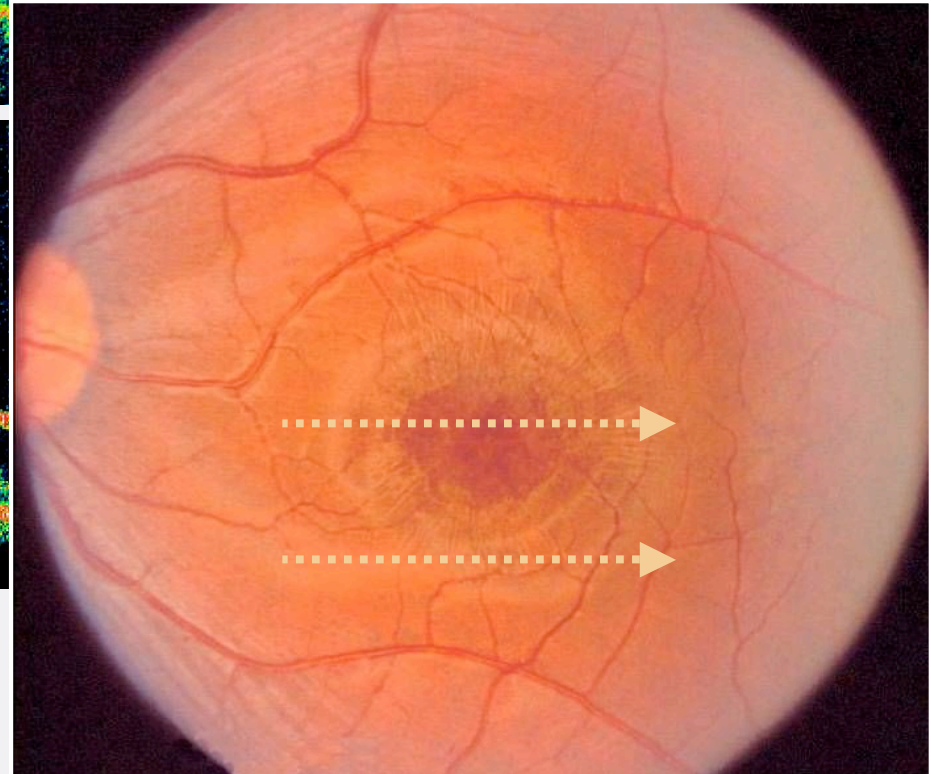
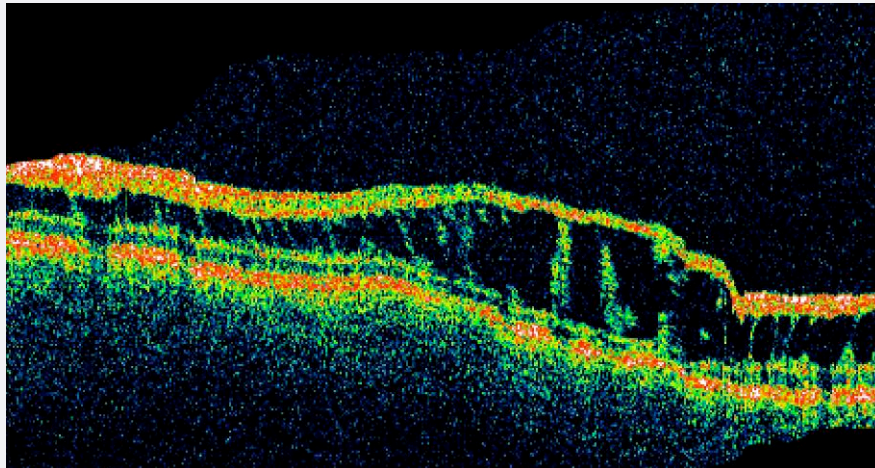
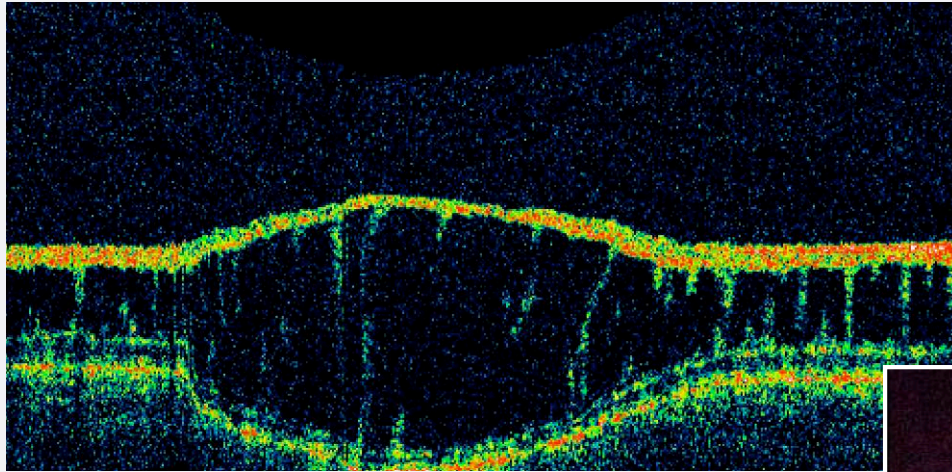
Interpretation of OCT images

Layers of the retina

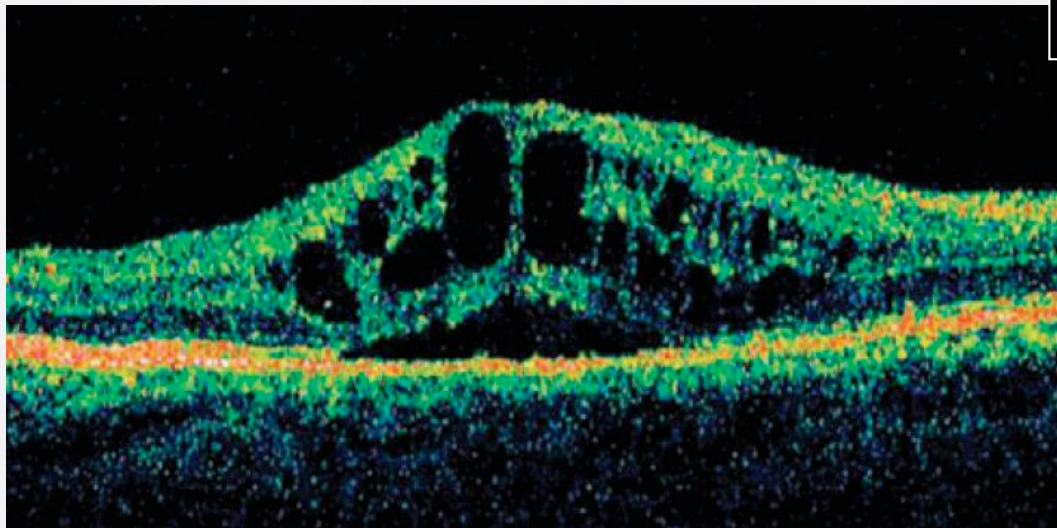
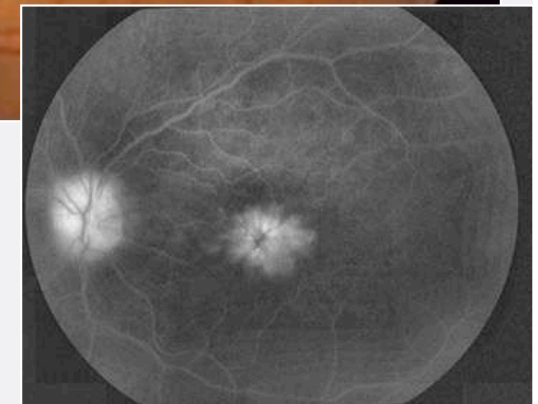
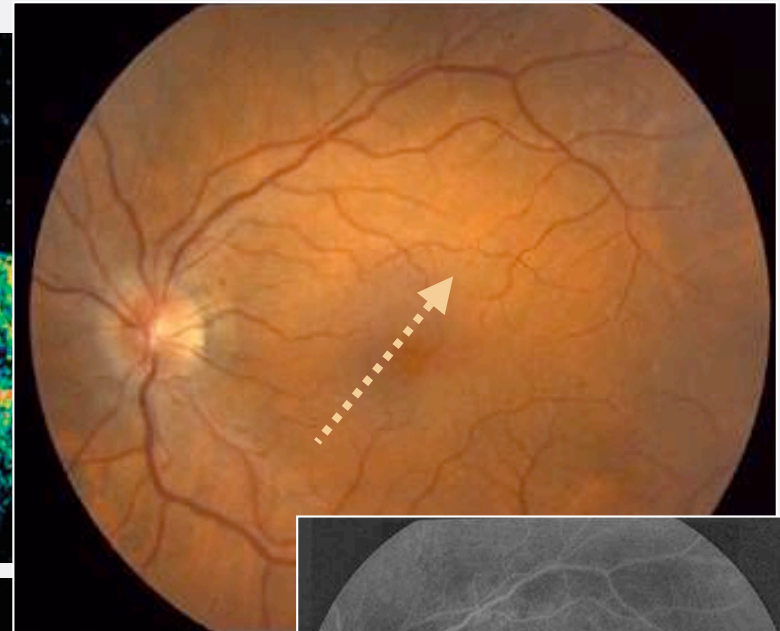
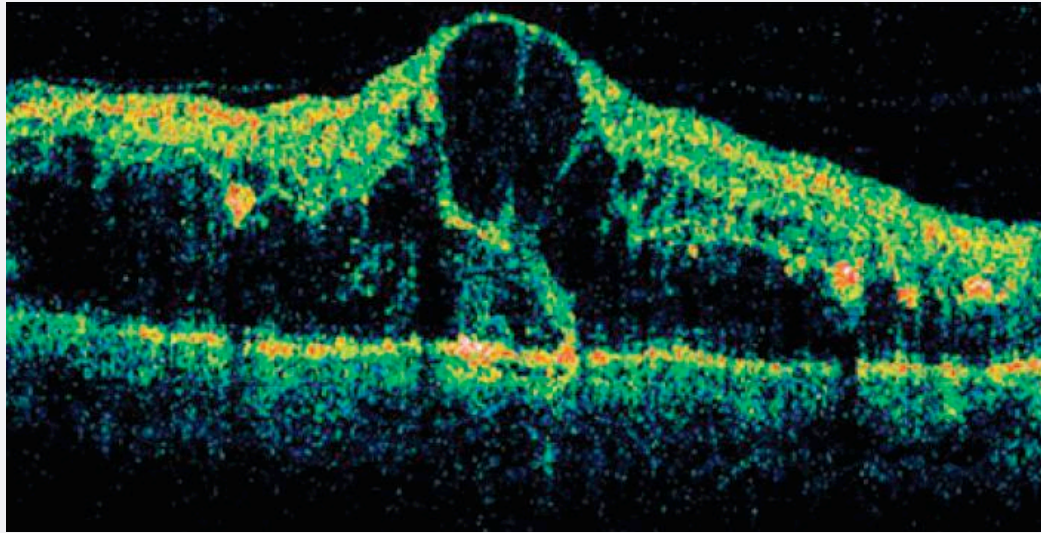


High resolution spectral OCT

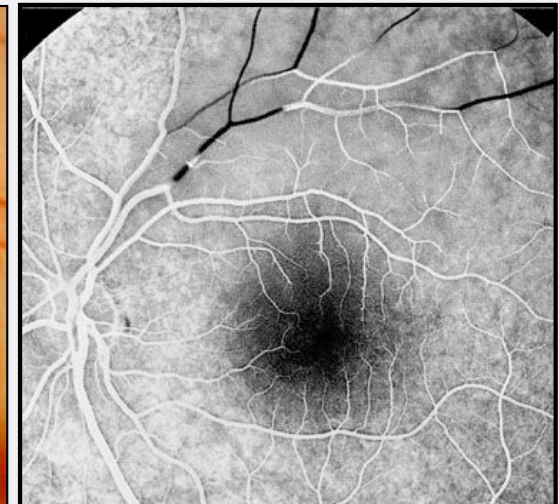
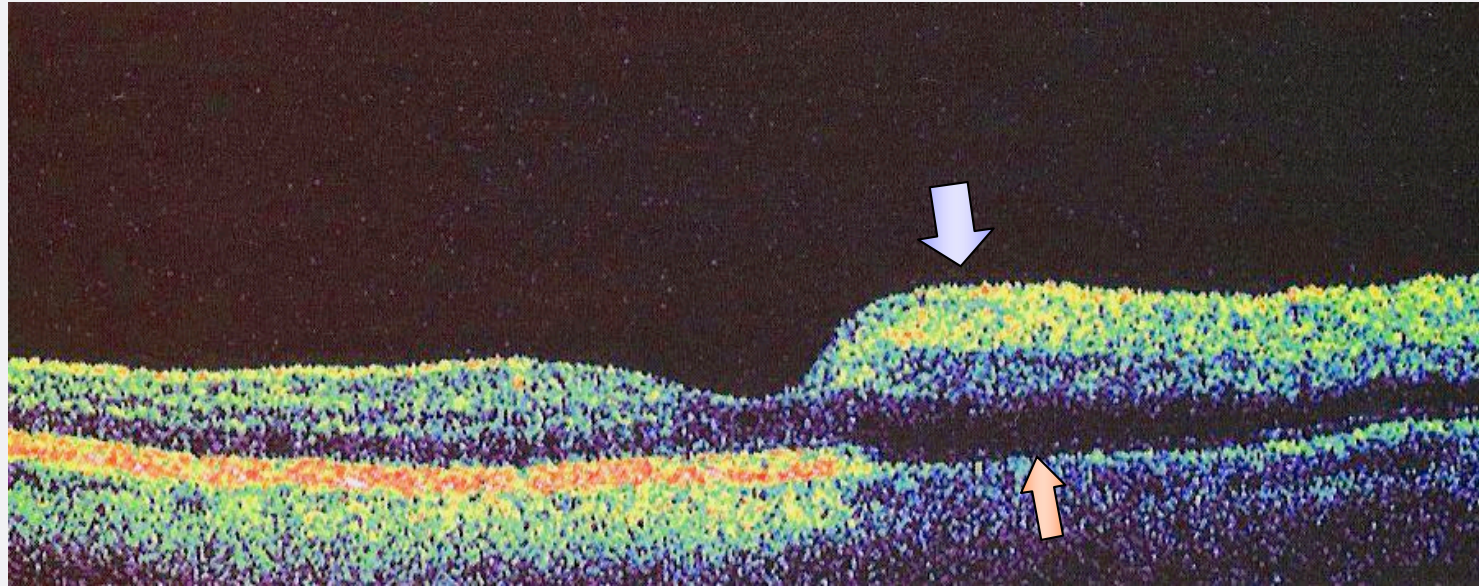
Key retinal pathologies – middle retina



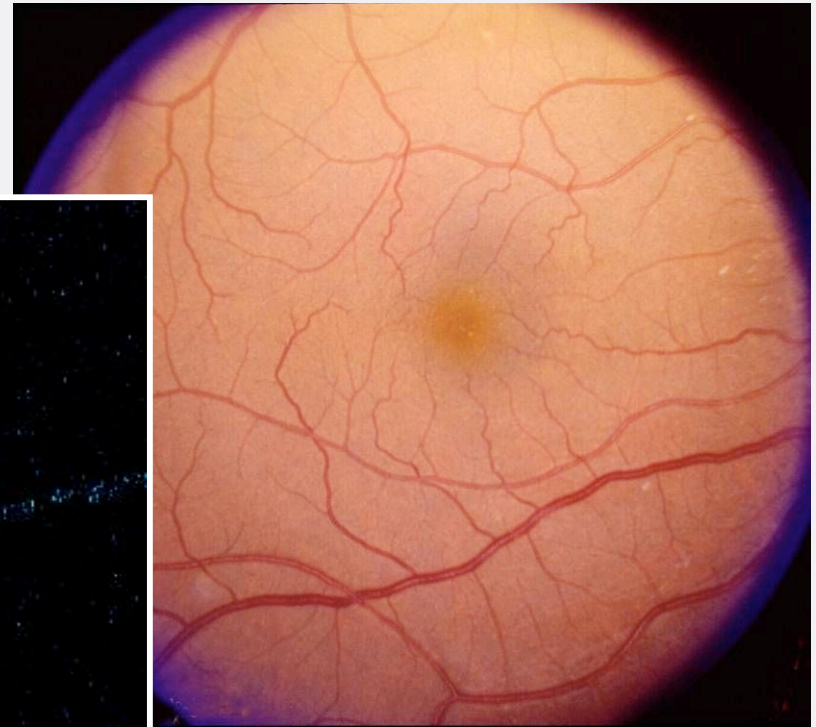
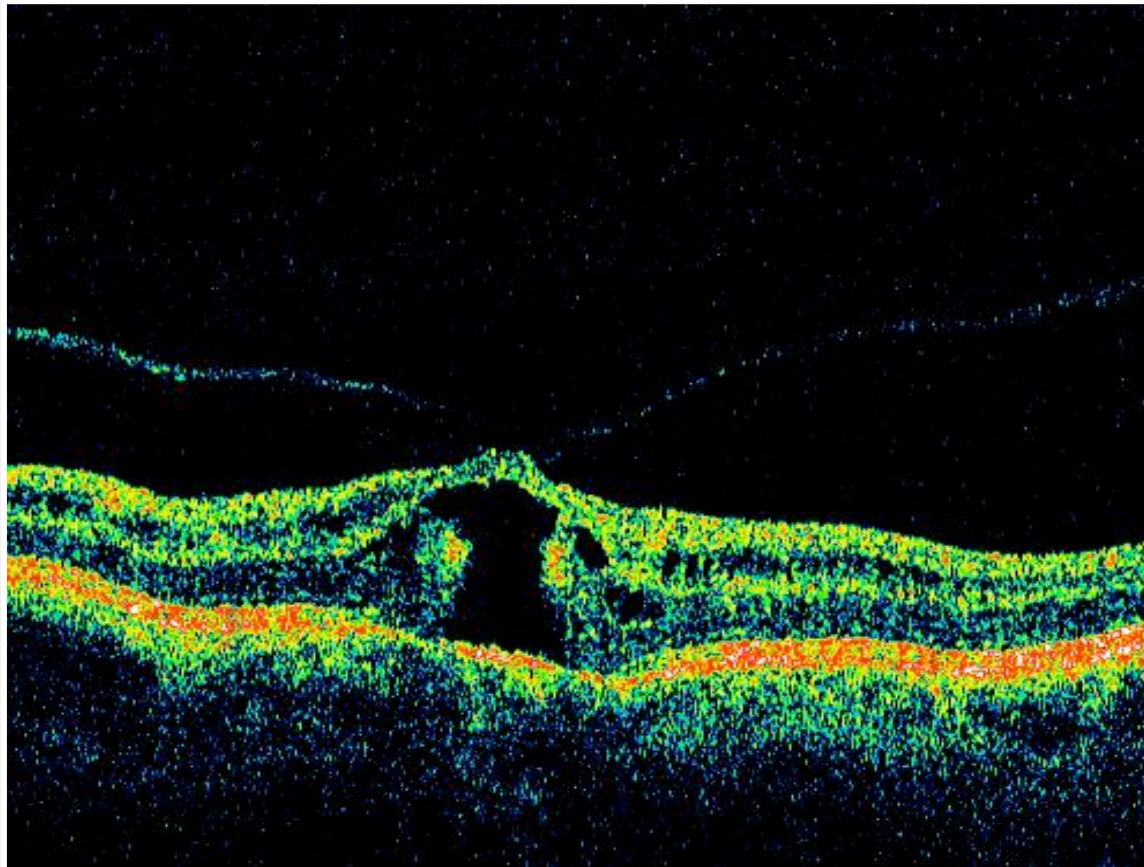
Key retinal pathologies – middle retina



Key retinal pathologies – middle retina

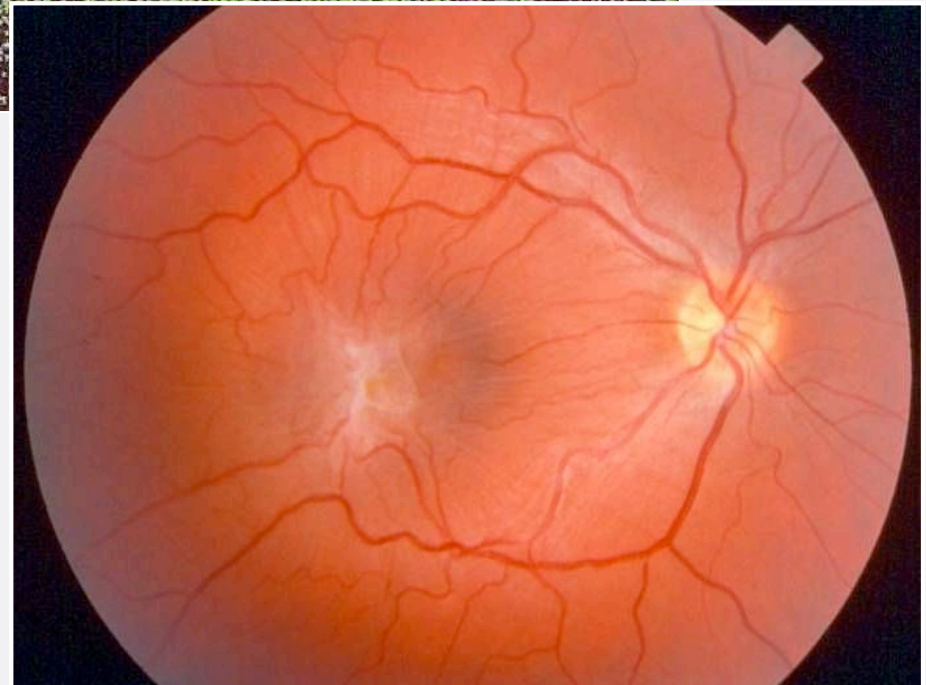
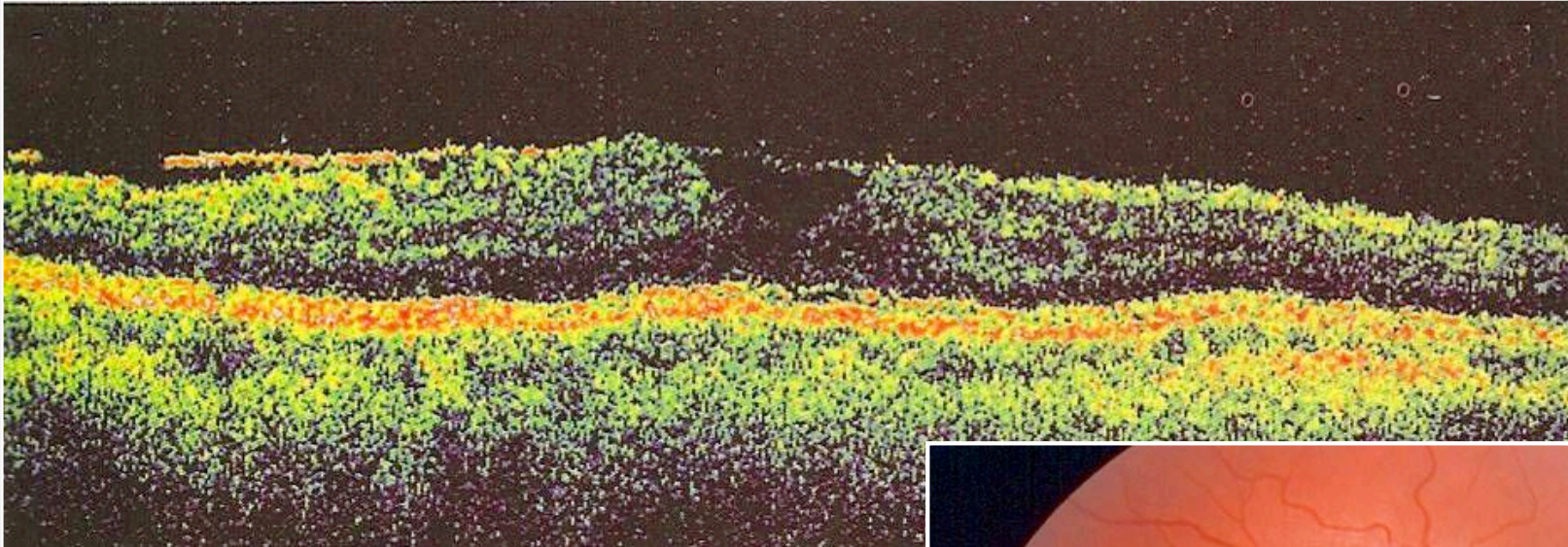


Key retinal pathologies – vitreo-retinal interface

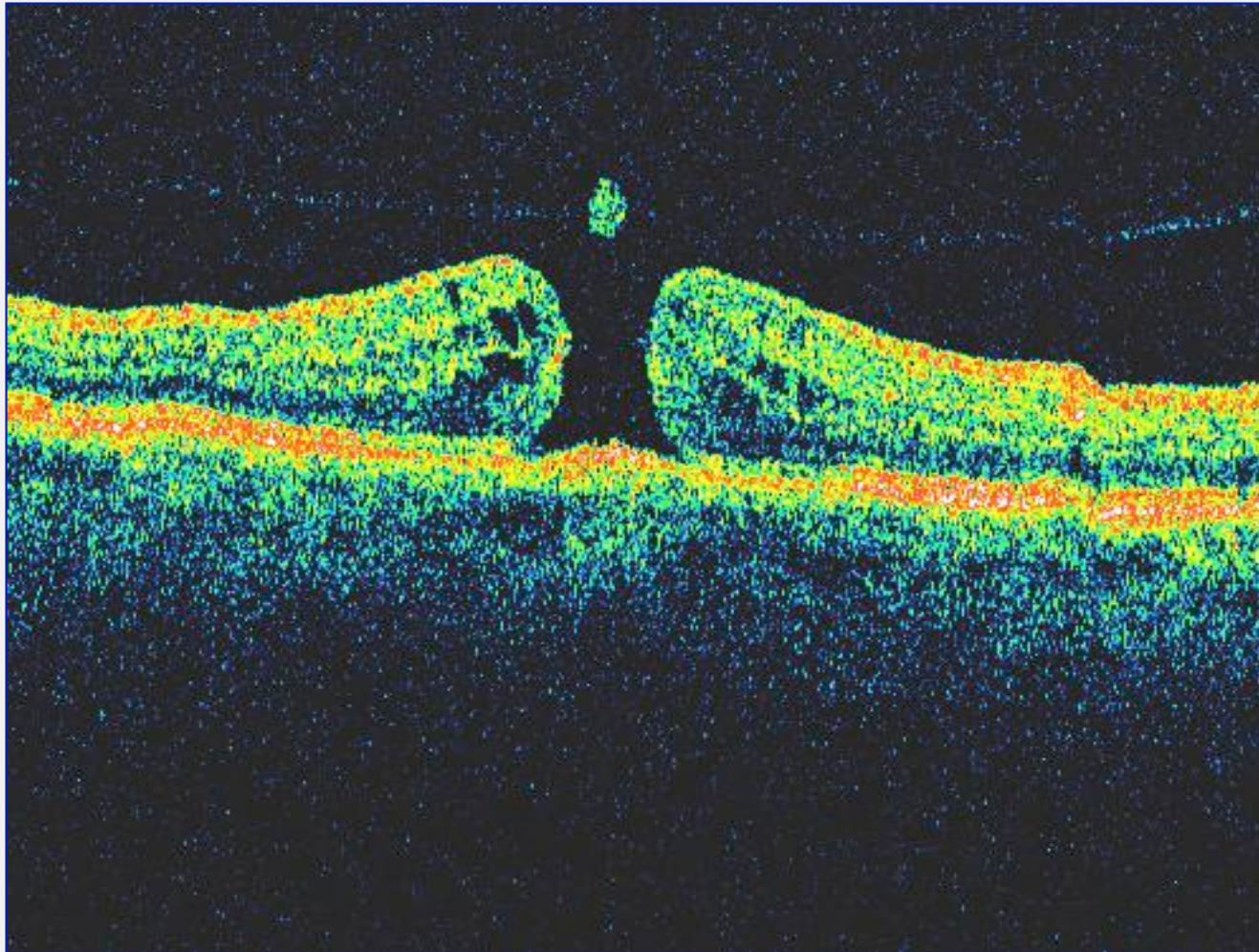


VA 20/40 following
cataract surgery

Key retinal pathologies – vitreo-retinal interface



Key retinal pathologies – vitreo-retinal interface



Artefacts in OCT imaging

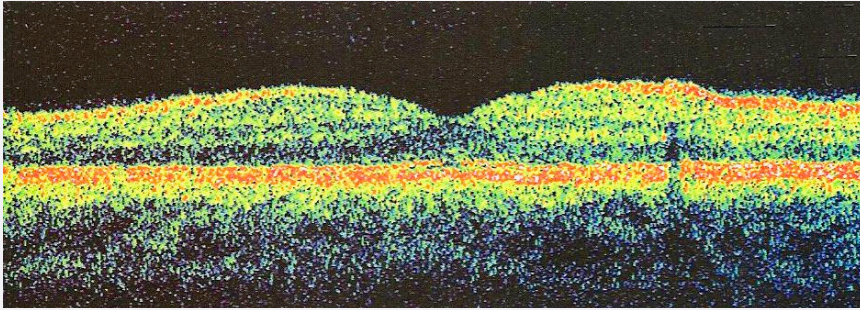
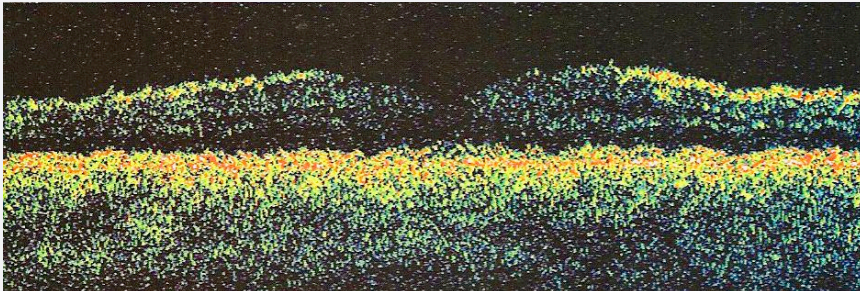
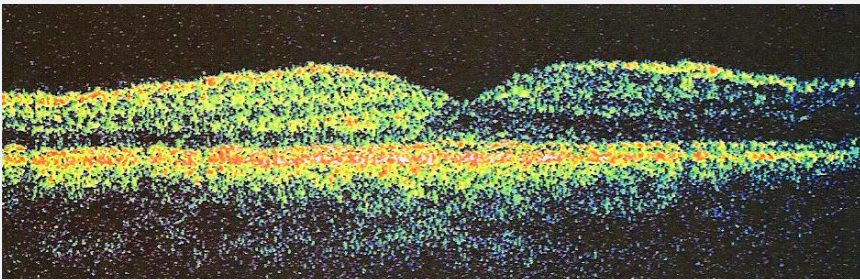


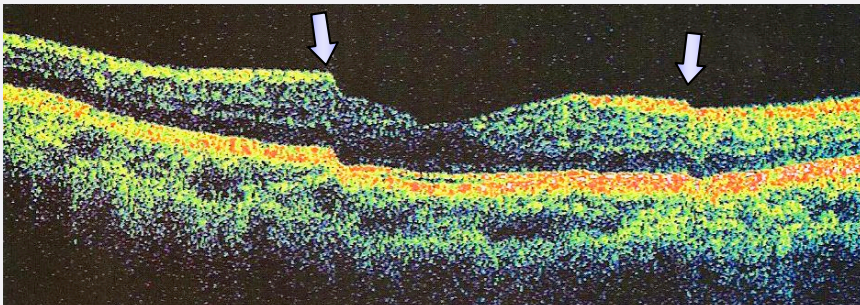
Image of good quality



Out of focus

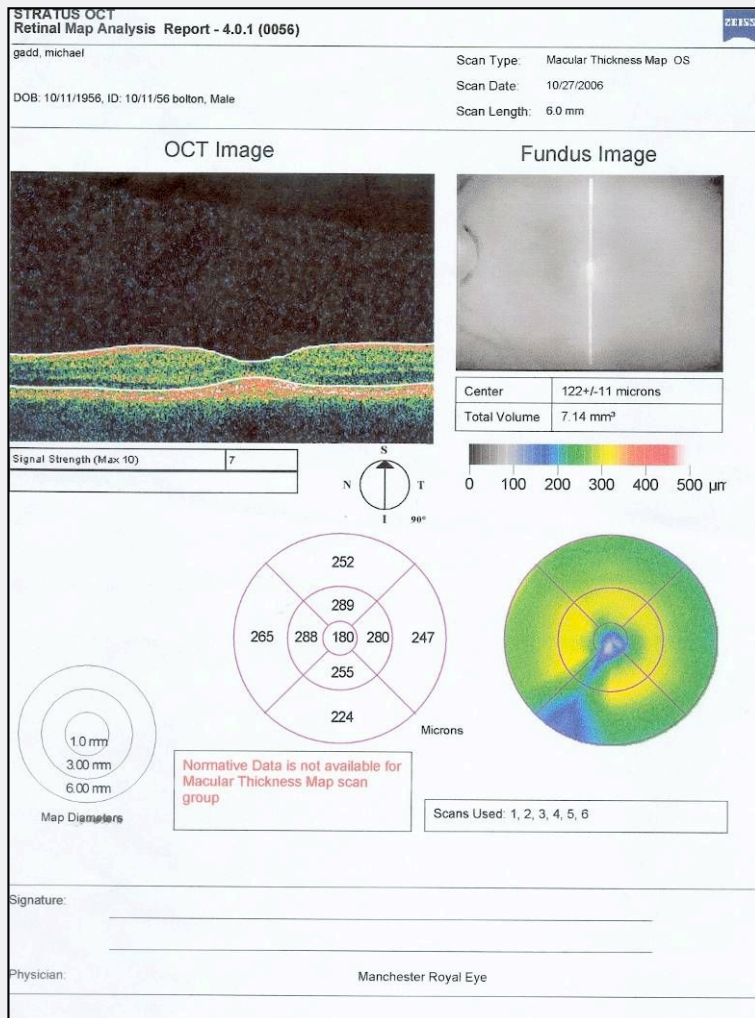


Vignetted image

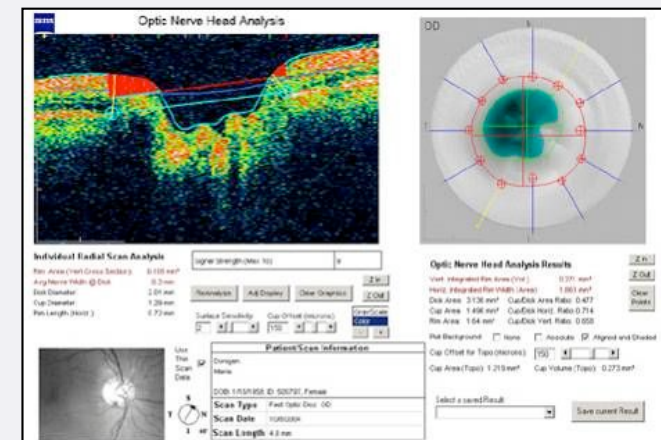


Fixation error

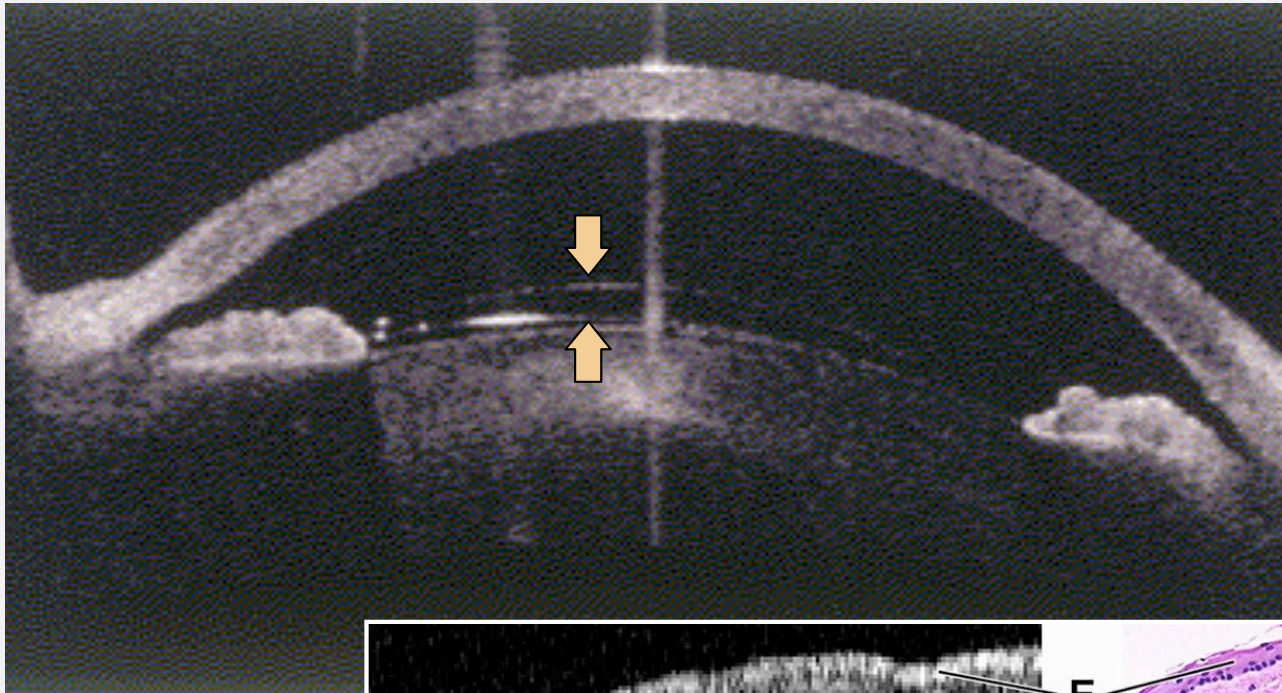
Kwalitative measurements



- Retinal thickness measurement
- Retinal nerve fiber layer thickness
- Optic nerve head analysis



New developments – Anterior segment OCT



Myopia claw lens

Arows = epithelialized drainage channels

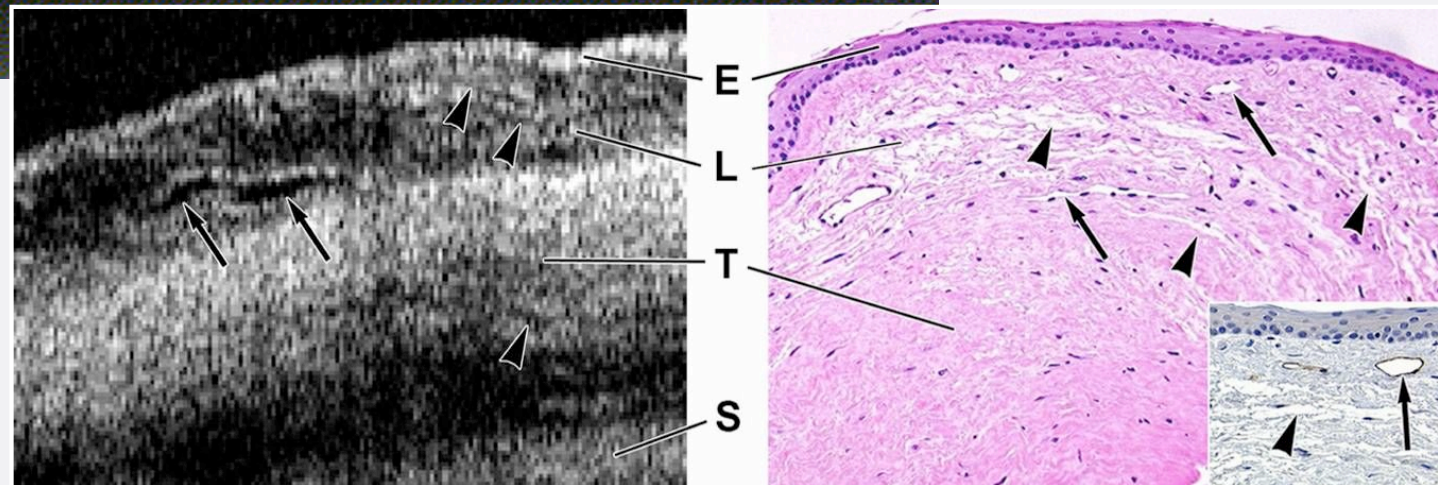
Arrowheads = non-epithelialized drainage slits

E = conjunctival epithelium

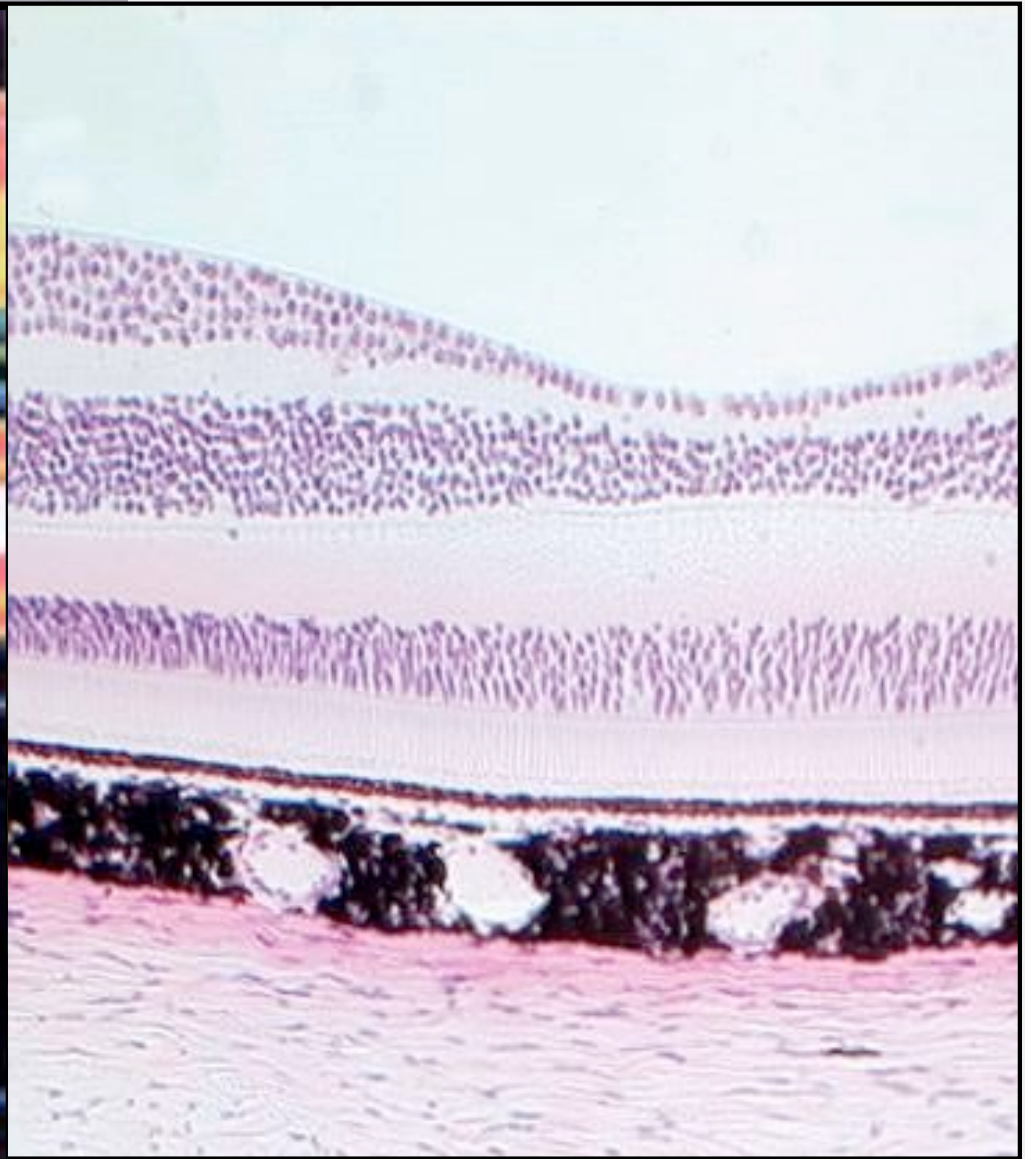
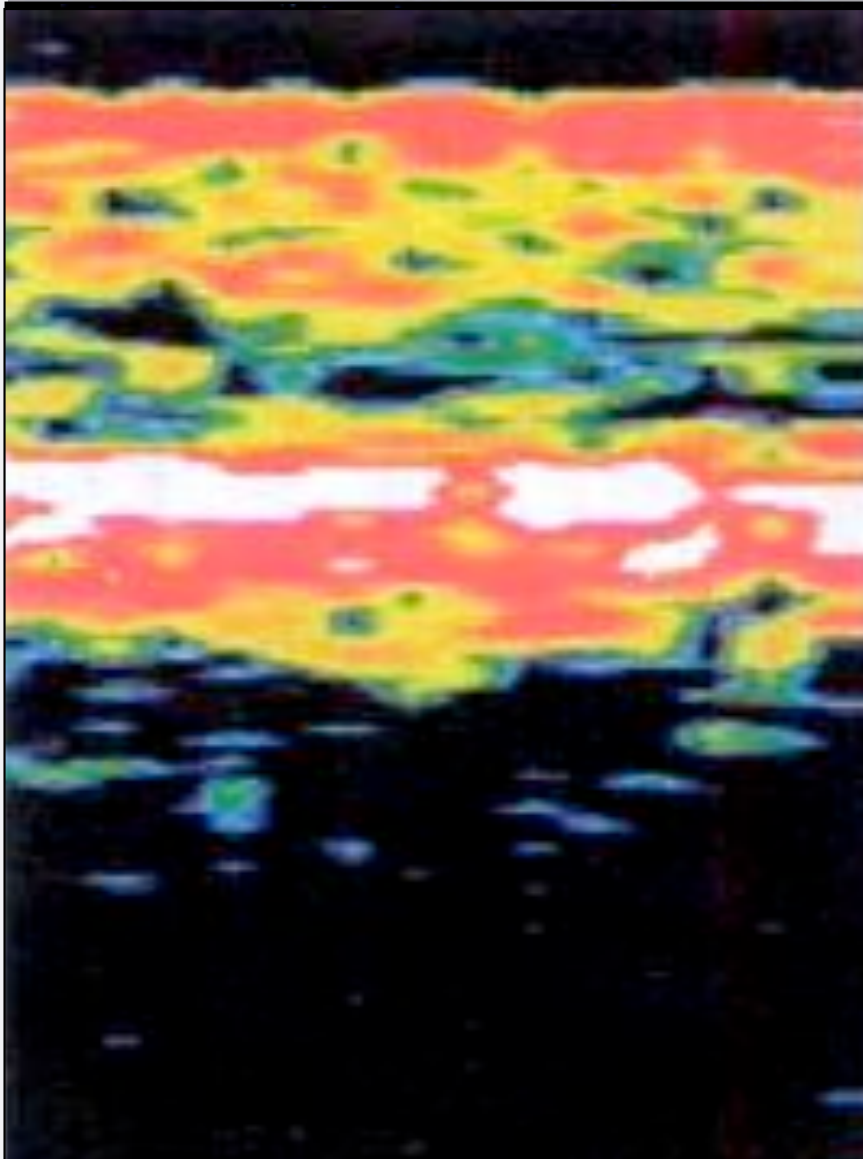
L = lamina propria conjunctivae

T = tenons layer

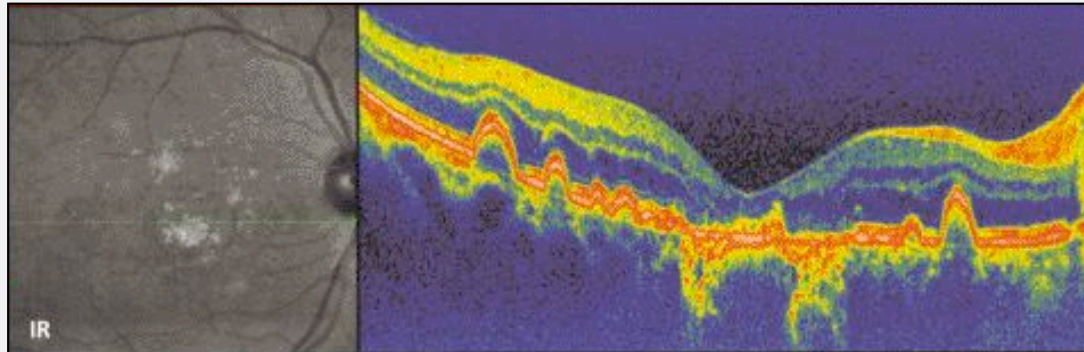
S = sclera



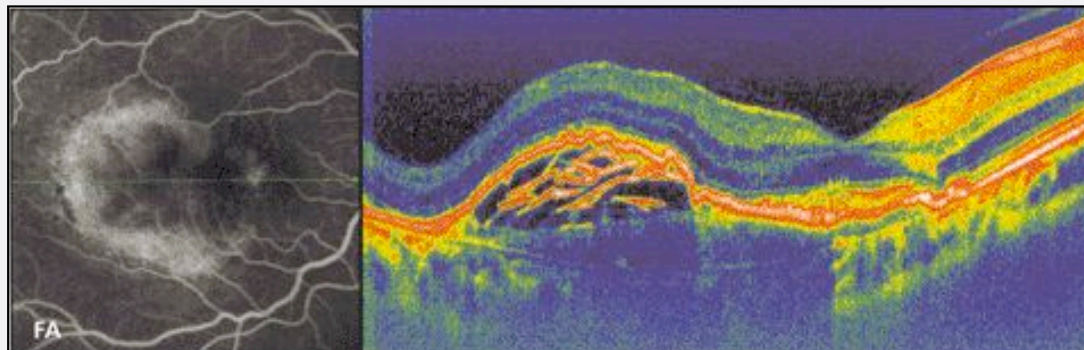
New developments – Spectral (Fourier) Domain Analysis



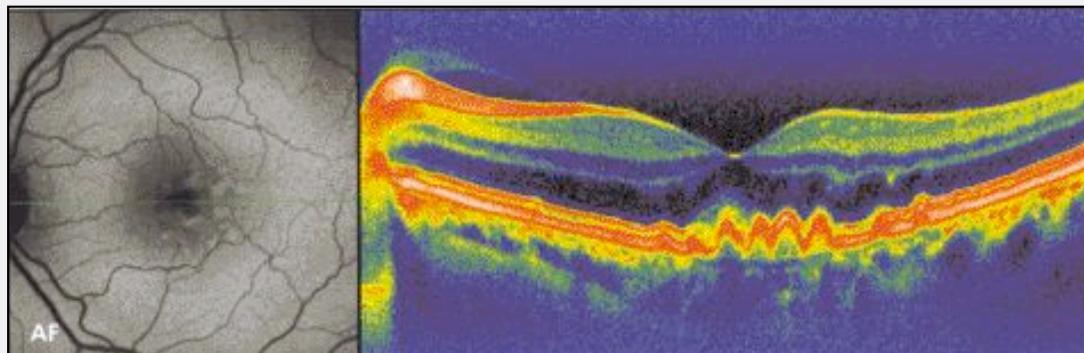
New developments – Heidelberg Spectralis



Geographic atrophy and drusen
Infrared and OCT

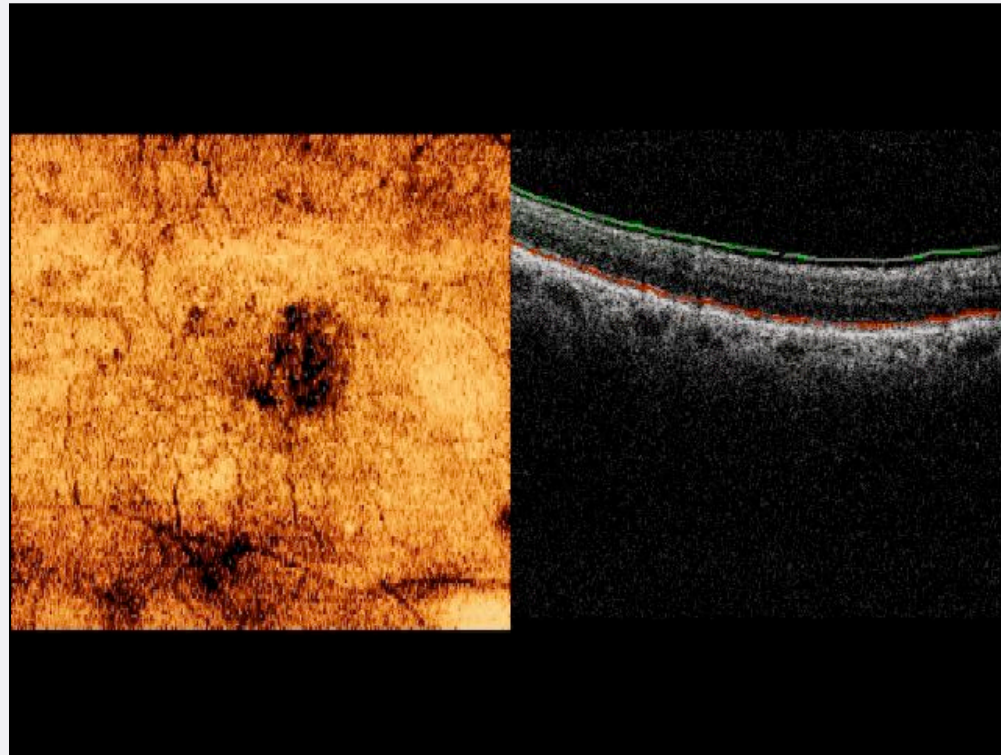


Occult CNV with PED
Fluorescein angiography and OCT

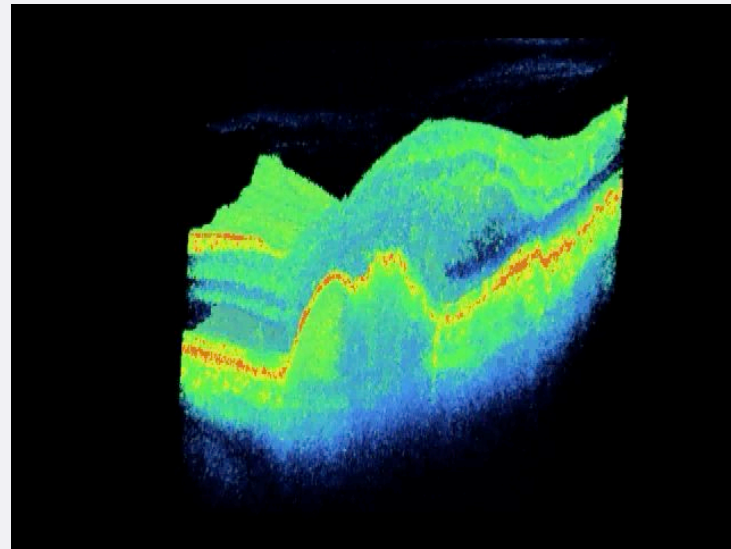
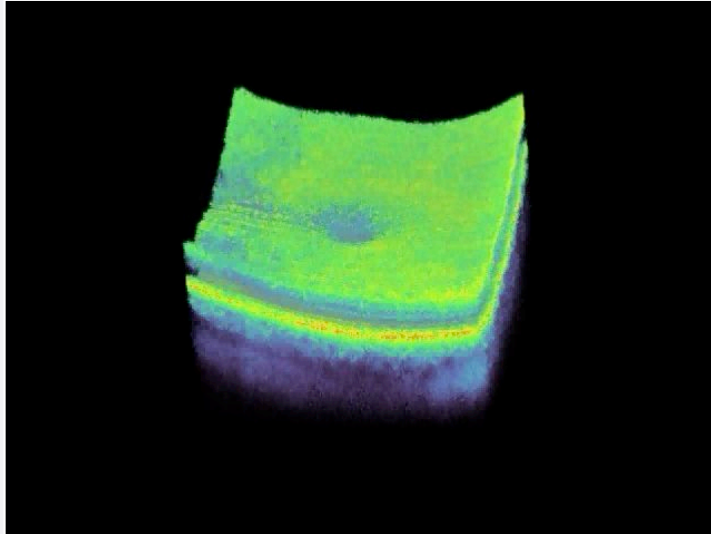


Dry AMD
Autofluorescence and OCT

New developments – Zeiss Cirrus



New developments – Zeiss Cirrus



The End