

4.11.1. Retina & Retinal pigment Epithelium (I): Topography

Macula

- definition
 - histologic
 - ganglion cell layer > 1 cell layer ★
 - highest concentration of cones
 - clinical
 - area bound by temporal vascular arcades
- subdivisions
 - foveola
 - only photoreceptors ♥
 - fovea
 - contains only cones ♥
 - 1.5 mm
 - parafovea
 - 0.5 mm
 - perifovea
 - 1.5 mm

- flower-petal appearance of cystoid macular edema
- star-shaped configuration of hard exudates
- oblique outer plexiform layer (Henle) ★
- macula lutea
 - xanthophyll pigment
 - dissolves during tissue processing

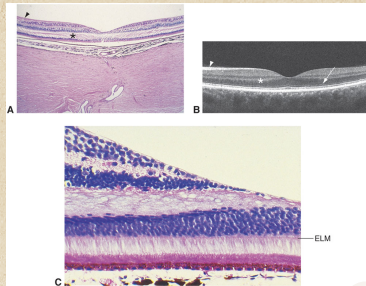


Figure 11-2 (© 2020 American Academy of Ophthalmology)

RPE

- anatomy
 - taller, narrower, and more pigmented in macula ★
 - monolayer of hexagonal cells
 - apical microvilli
 - basement membrane
 - cytoplasmic pigment
 - especially lipofuscin
 - increases with aging ↑
- functions
 - vitamin A metabolism
 - outer blood-retina barrier
 - phagocytosis of photoreceptor outer segments
 - light absorption
 - heat exchange
 - formation of basal lamina of inner portion of Bruch membrane
 - mucopolysaccharide matrix around photoreceptor outer segments
 - active transport of material into and out of subretinal space

Embryology

- neurosensory retina
 - from inner layer of optic cup
- RPE
 - from outer layer of optic cup
- neuroectoderm

at ora

- neurosensory retina
 - continuous with nonpigmented ciliary epithelium
- RPE
 - continuous with pigmented ciliary epithelium

9 layers of neurosensory retina

- internal limiting membrane
 - ★ true basement membrane
 - ♥ synthesized by Muller cells
- nerve fiber layer
 - runs horizontally
 - feathery hemorrhages
- ganglion cell layer
- inner plexiform layer
- inner nuclear layer
- outer plexiform layer
- outer nuclear layer
 - nuclei of photoreceptors
- external limiting membrane
 - ✗ not true membrane
 - desmosomes between Muller cells and photoreceptors
- photoreceptors
 - inner & outer segments of rods/cones

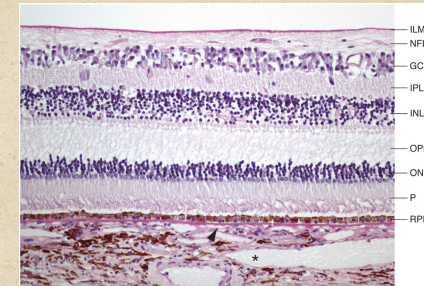


Figure 11-1 (© 2020 American Academy of Ophthalmology)

blood supply of neurosensory retina

- retinal blood vessels
 - ✓ NFL
 - ✓ ganglion cell layer
 - ✓ inner plexiform layer
 - ✓ inner 2/3 of inner nuclear layer
 - outer 1/3 of inner nuclear layer
 - outer plexiform layer
- choroidal vasculature
 - outer nuclear layer
 - photoreceptors
 - RPE