

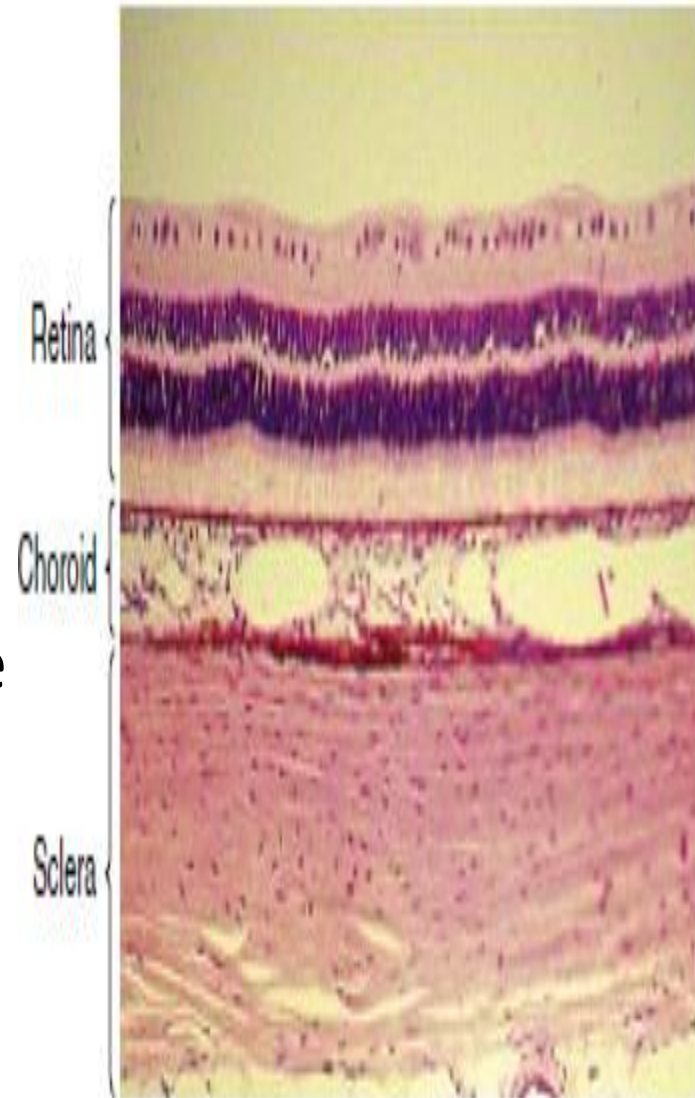
CHOROID

Sourav

HOD

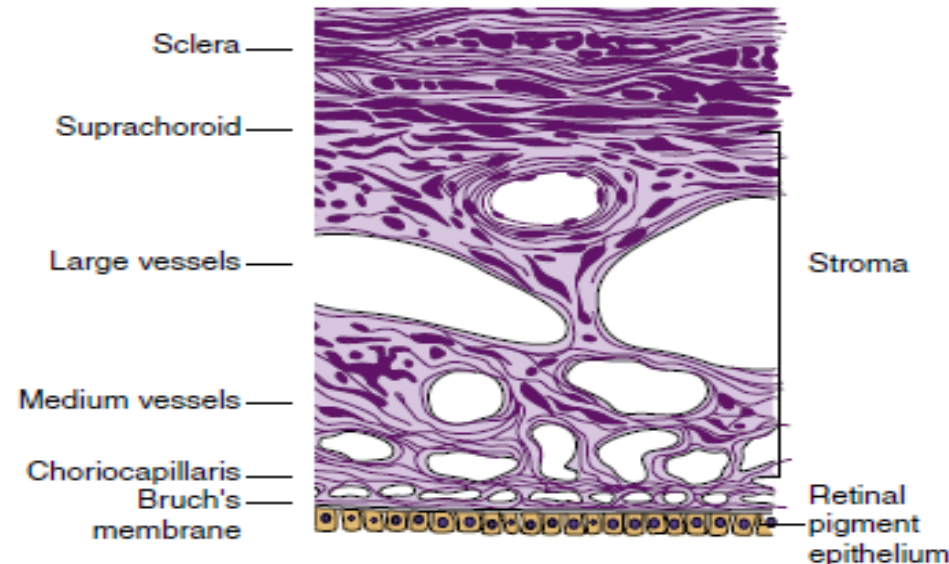
Introduction

- The choroid extends from the ora serrata to the optic nerve and is located between the sclera and the retina, providing nutrients to outer retinal layers.
- It consists primarily of blood vessels. A thin connective tissue layer lies on each side of the stromal vessel layer



SUPRACHOROID LAMINA (*LAMINA FUSCA*)

- Thin, pigmented, ribbonlike branching bands of connective tissue—the suprachoroid lamina or lamina fusca—traverse a *potential space* (*the suprachoroidal space* or “perichoroidal” space) between the sclera and the choroidal vessels.



Sclera

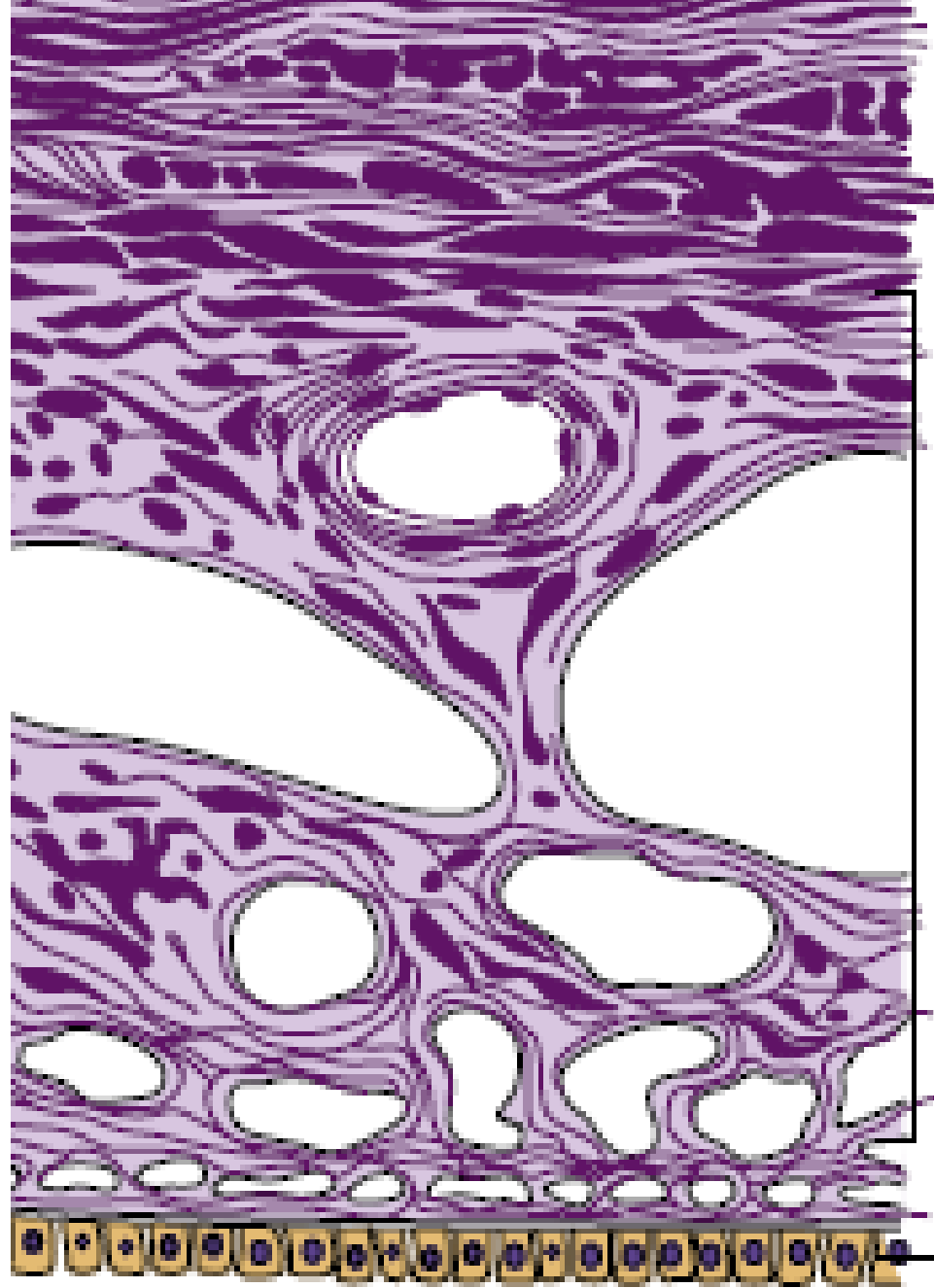
Suprachoroid

Large vessels

Medium vessels

Choriocapillaris

Bruch's
membrane



Stroma

Retinal
pigment
epithelium

Continue...

- This layer contains components from both sclera (collagen bands and fibroblasts) and choroidal stroma (melanocytes).
- If the choroid separates from the sclera, part of the suprachoroid will adhere to the sclera and part will remain attached to the choroid.

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- The looseness of the tissue allows the vascular net to swell without causing detachment. The suprachoroidal space carries the long posterior ciliary arteries and nerves from posterior to anterior globe.

CHOROIDAL STROMA

- The choroidal stroma is a pigmented, vascularized, loose connective tissue layer containing melanocytes, fibroblasts, macrophages, lymphocytes, and mast cells.
- Collagen fibrils are arranged circularly around the vessels, which are branches of the short posterior ciliary arteries.

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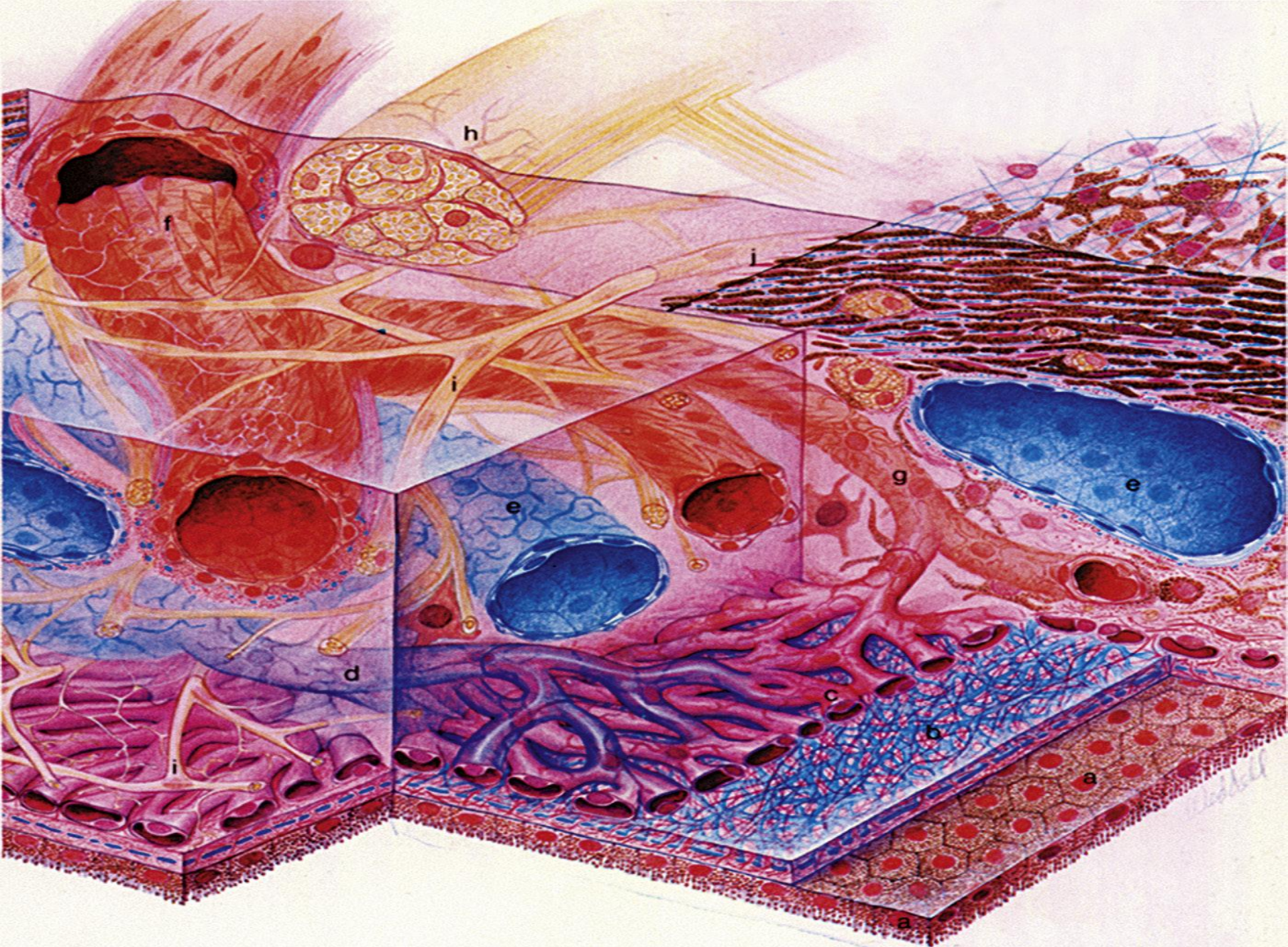
- These vessels are organized into tiers, those with larger lumina occupying the outer layer (*Haller's layer*).
- They branch as they pass inward, forming the medium-sized vessels (*Sattler's layer*), which continue branching to form a capillary bed.

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- The venules join to become veins that gather in a characteristic vortex pattern in each quadrant of the eye and exit the choroid as four (occasionally five) large vortex veins.
- Choroidal veins contain no valves.
- The choroidal vessels are innervated by the autonomic nervous system.

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- Sympathetic stimulation causes vasoconstriction and decreased choroidal blood flow;
- parasympathetic stimulation causes a nitrous oxide responsive vasodilation, resulting in increased choroidal blood flow.



CHORIOCAPILLARIS

- The specialized capillary bed is called the choriocapillaris (*lamina choroidocapillaris*).
- It forms a single layer of anastomosing, fenestrated capillaries having wide lumina with most of the fenestrations facing toward the retina.

Continue...

- In each, the lumen is approximately three to four times that of ordinary capillaries, such that two or three red blood cells can pass through the capillary abreast, whereas in ordinary capillaries the cells usually course single file.
- The cell membrane is reduced to a single layer at the fenestrations, facilitating the movement of material through the vessel walls.

Continue...

- Occasional *pericytes (Rouget cells)*, which may have a contractile function, are found around the capillary wall.
- Pericytes have the ability to alter local blood flow.
- The choriocapillaris is densest in the macular area, where it is the sole blood supply for a small region of the retina.
- The choriocapillaris is unique to the choroid and does not continue into the ciliary body.

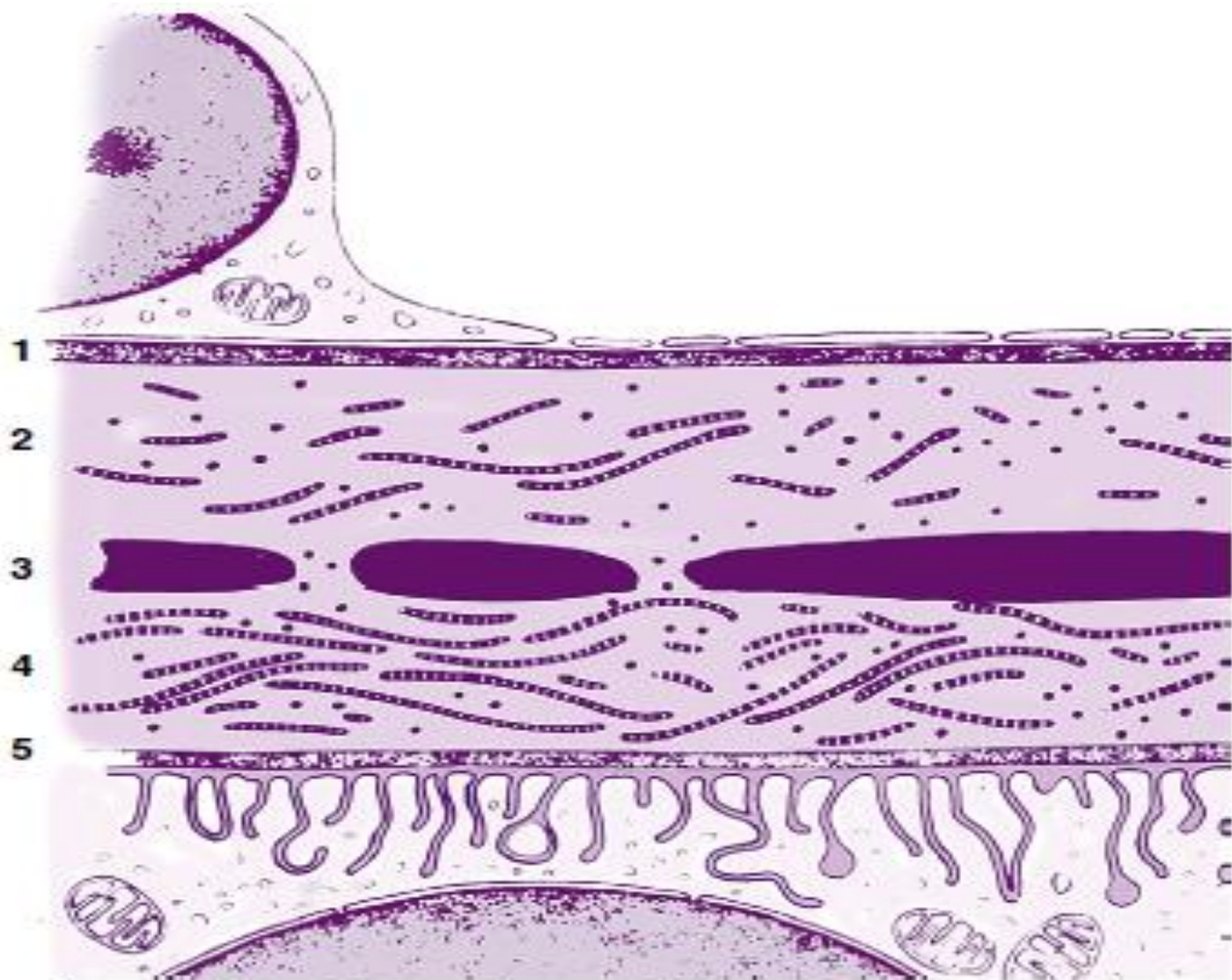
BRUCH'S MEMBRANE

(BASAL LAMINA)

- The innermost layer of the choroid, Bruch's membrane, fuses with the retina. It runs from the optic nerve to the ora serrata, where it undergoes some modification before continuing into the ciliary body.
- Bruch's membrane (or the basal lamina) is a multilaminated sheet containing a center layer of elastic fibers.

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- the membrane components, from outer to inner, are the
 - (1) interrupted basement membrane of the choriocapillaris,
 - (2) outer collagenous zone,
 - (3) elastic layer,
 - (4) inner collagenous zone,
 - (5) basement membrane of the RPE cells



Layers of Bruch's membrane, delineated on basis of electron microscope studies: 1, Interrupted basement membrane of choriocapillaris; 2, outer collagenous zone; 3, elastic layer; 4, inner collagenous zone; 5, basement membrane of retinal pigment epithelial cells.

Continue...

- Fine filaments from the basement membrane of the RPE merge with the fibrils of the inner collagenous zone, contributing to the tight adhesion between choroid and the outer, pigmented layer of the retina.

Continue...

- At the ora serrata, the basement membrane of the RPE is continuous with the basement membrane of the pigmented epithelium of the ciliary body.
- The collagenous and elastic layers disappear into the ciliary stroma, and the basement membrane of the choriocapillaris continues as the basement membrane of the ciliary body capillaries.

- Thank you