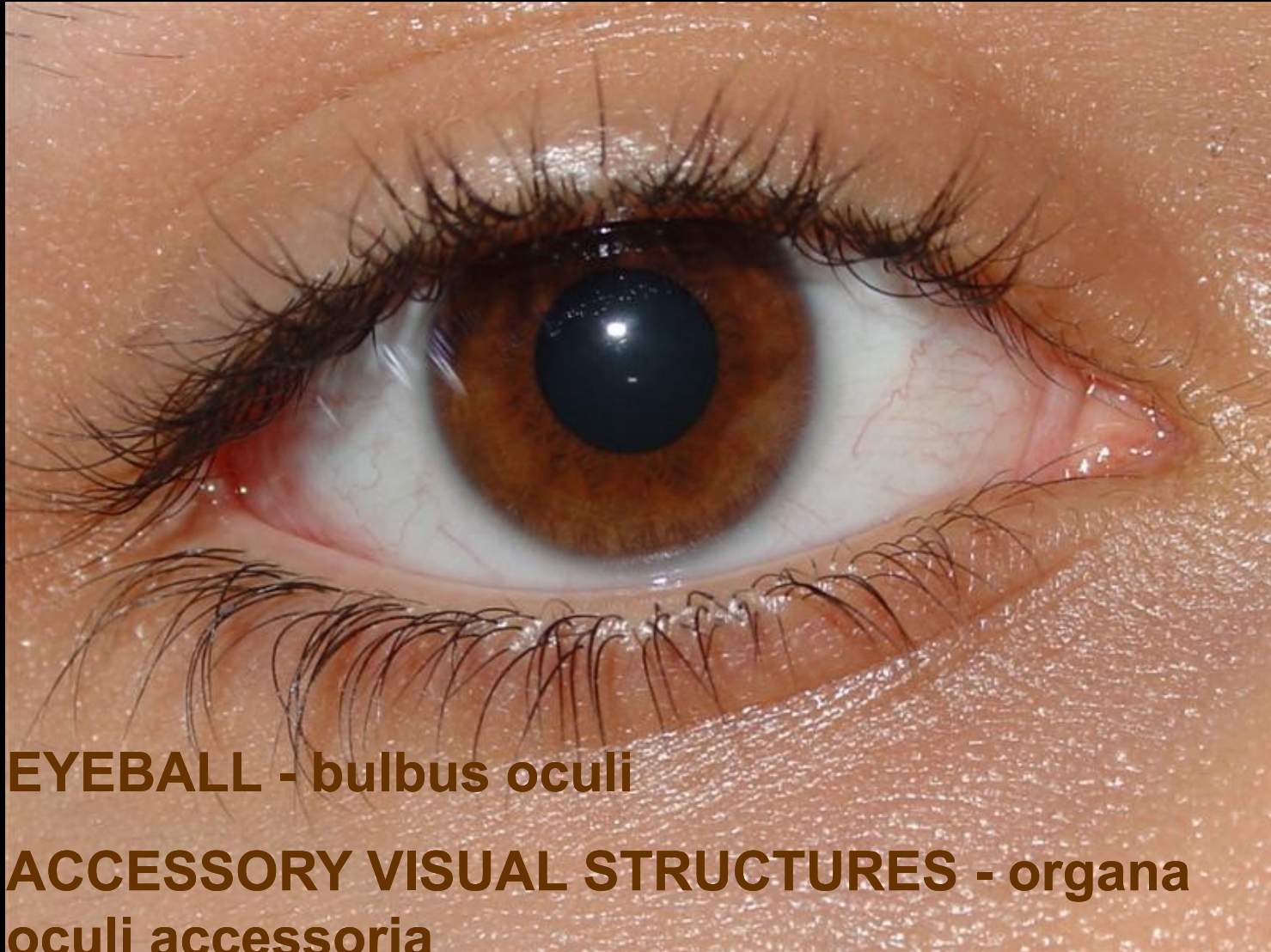


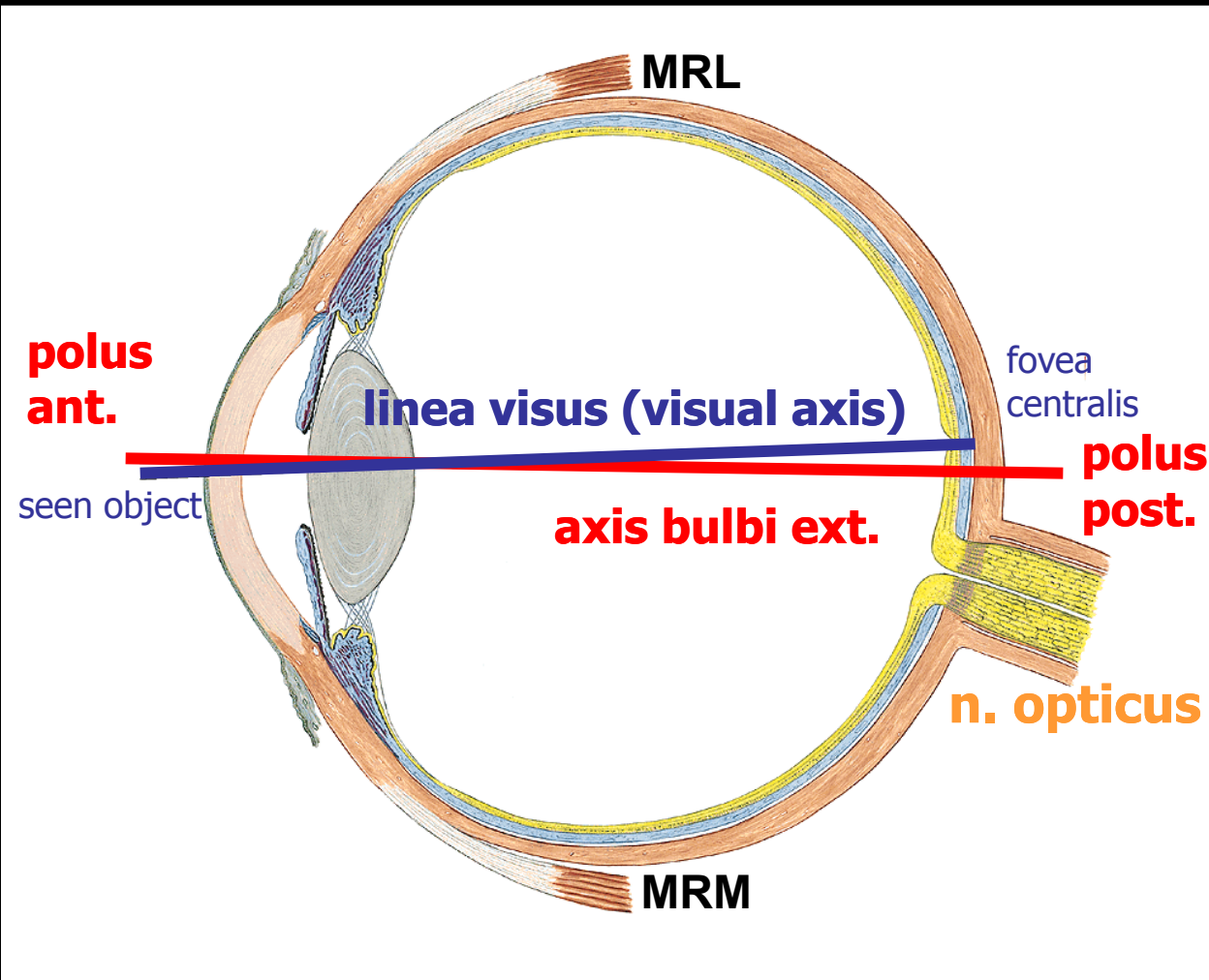
# VISUAL APPARATUS



**EYEBALL - bulbus oculi**

**ACCESSORY VISUAL STRUCTURES - organa  
oculi accessoria**

# **Eyeball** (AP diameter 24 - 26 mm)

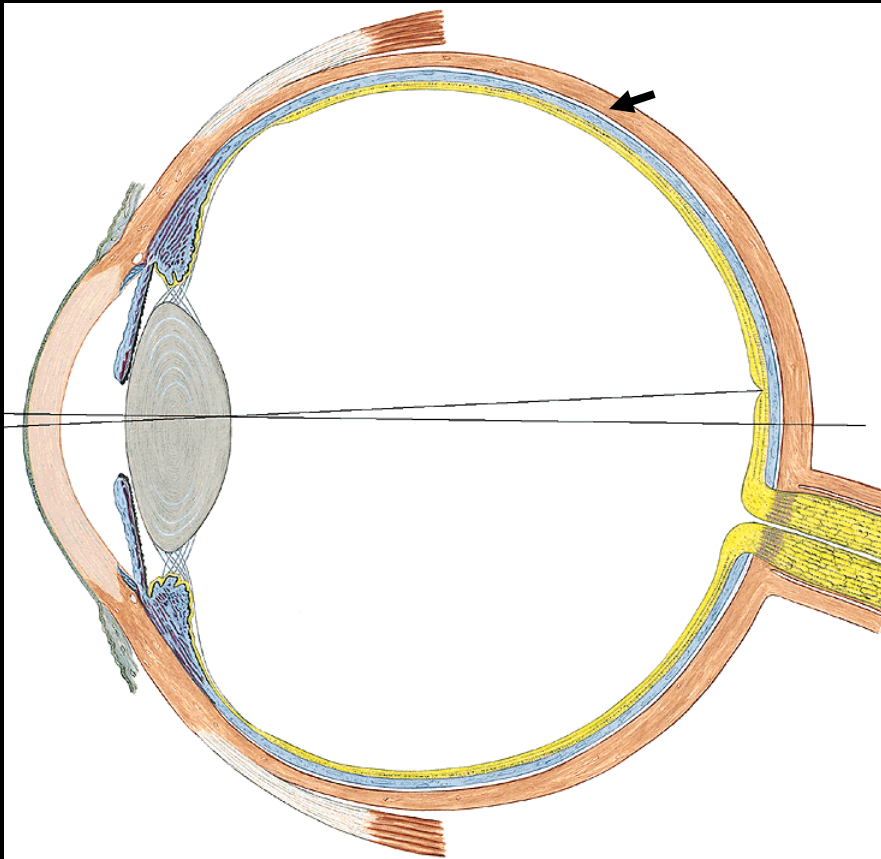


## **Layers:**

- 1. tunica fibrosa**
- 2. t. vasculosa**
- 3. t. interna**

# 1. tunica fibrosa

fibrous skeleton of the eyeball  
attachment of muscles



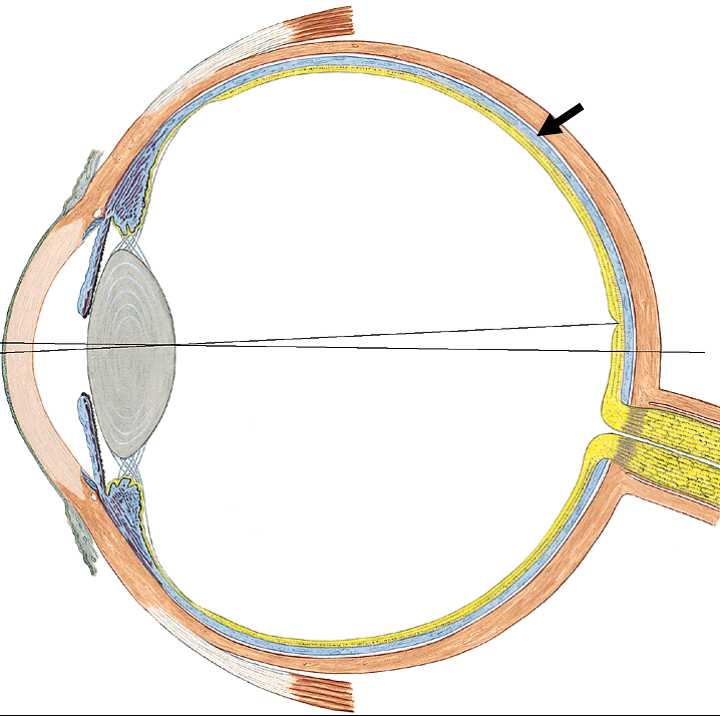
**Sclera** - post. 5/6

- limbus sclerae
- sulcus sclerae
- sinus ven. sclerae
- l. cribrosa sclerae

**Cornea** - ant. 1/6

- limbus corneae
- facies ant. et post.

## 2. tunica vasculosa



## Choroid (2/3)

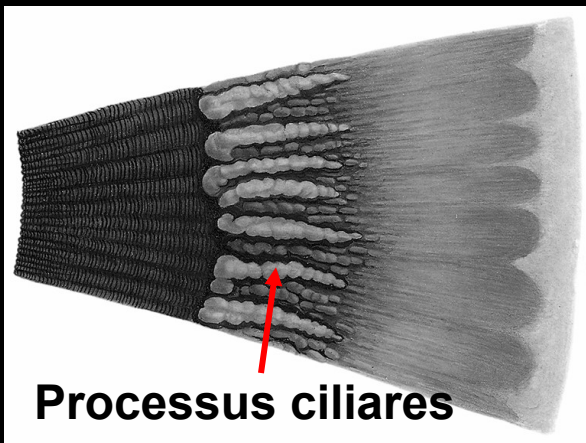
- ✓ supplies the retina
- ✓ pigmented – light-absorbing
- ✓ vascular

## Corpus ciliare

- ✓ attachment for the lens
- ✓ controls thickness of the lens
- ✓ secretion of aqueous humor

## Iris

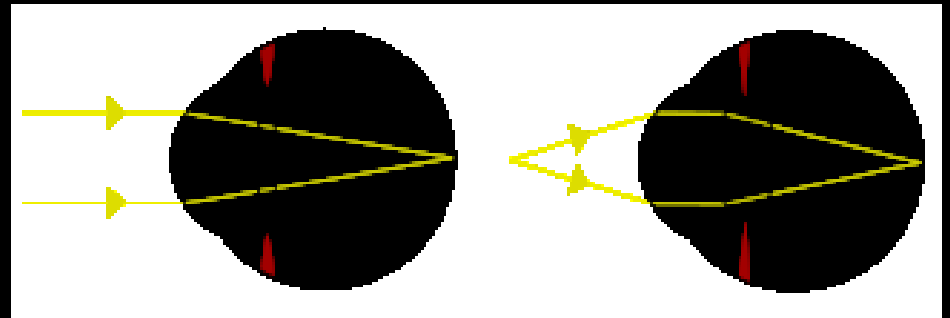
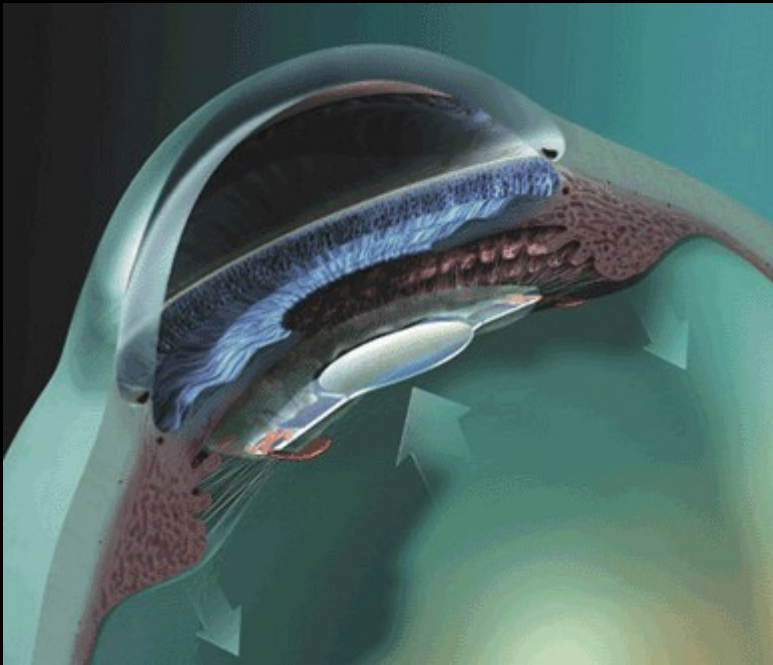
- ✓ contractile diaphragm with a central aperture – pupil
  - facies ant. et post.
  - sphincter, dilator



Processus ciliares

# M. ciliaris

## Accommodation of the lens

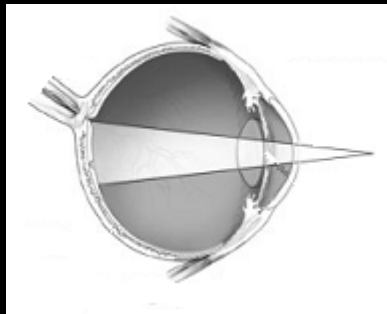


increased convexity of the  
lens – refraction suitable  
for near vision

Innervation: **E-W ncl. CN III**

**M. sphincter pupillae**

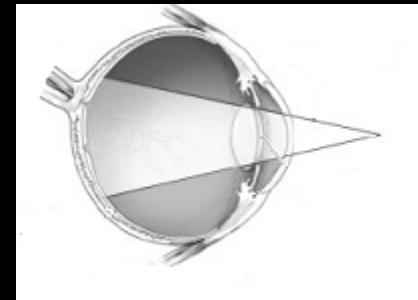
**Miosis**



**E-W ncl. CN III**

**M. dilatator pupillae**

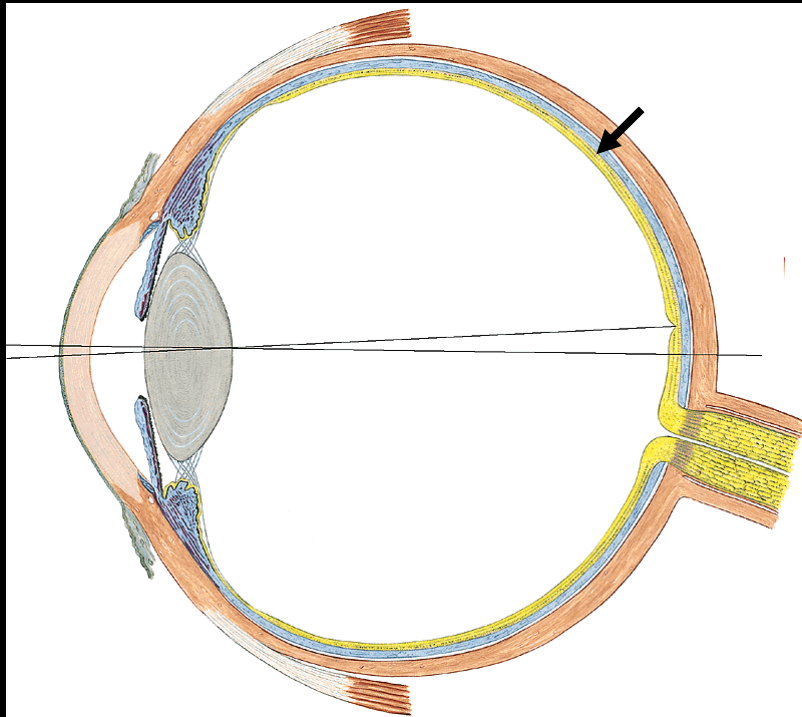
**Mydriasis**



**Symp.ncl.**

# 3. tunica interna

## Retina

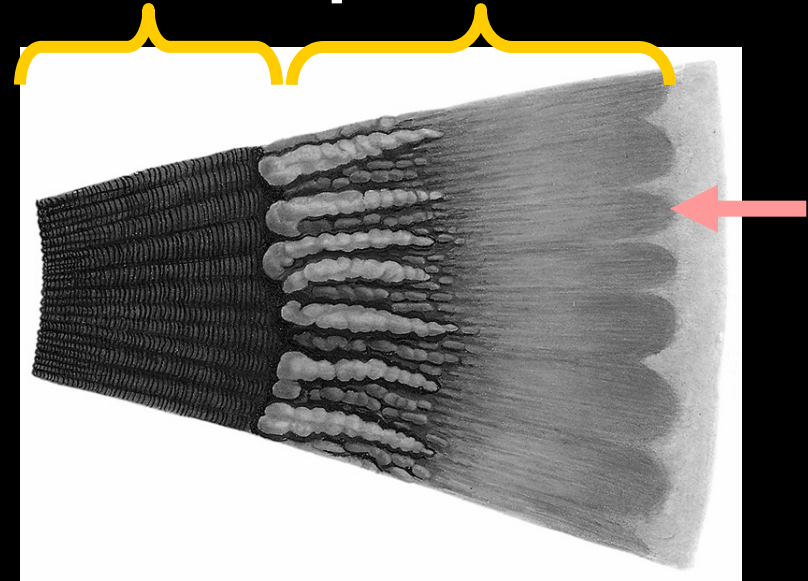


- pars optica  
(rods, cones)

ora serrata

- pars caeca:

p. iridica      p. ciliaris



# Layers of the retina

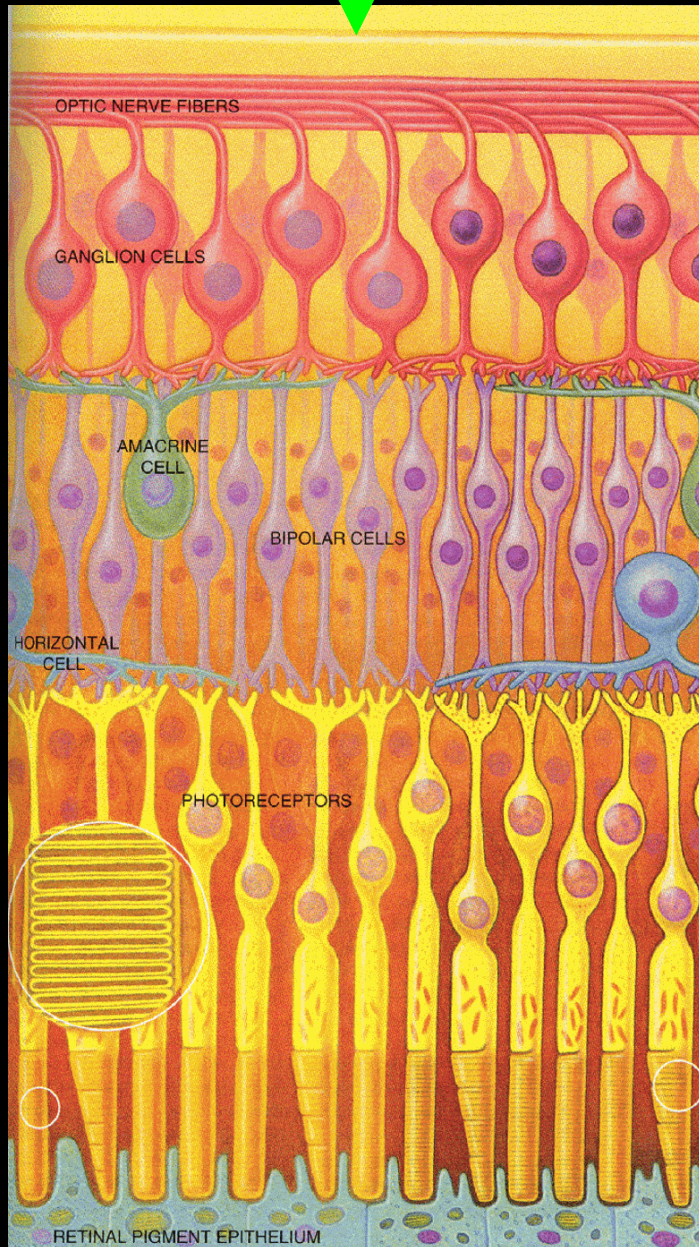
## N. opticus

str. ganglionare n. optici

str. ganglionare retinae

str. neuroepitheliale

str. pigmentosum





## **Photoreceptors:**

### **Rods**

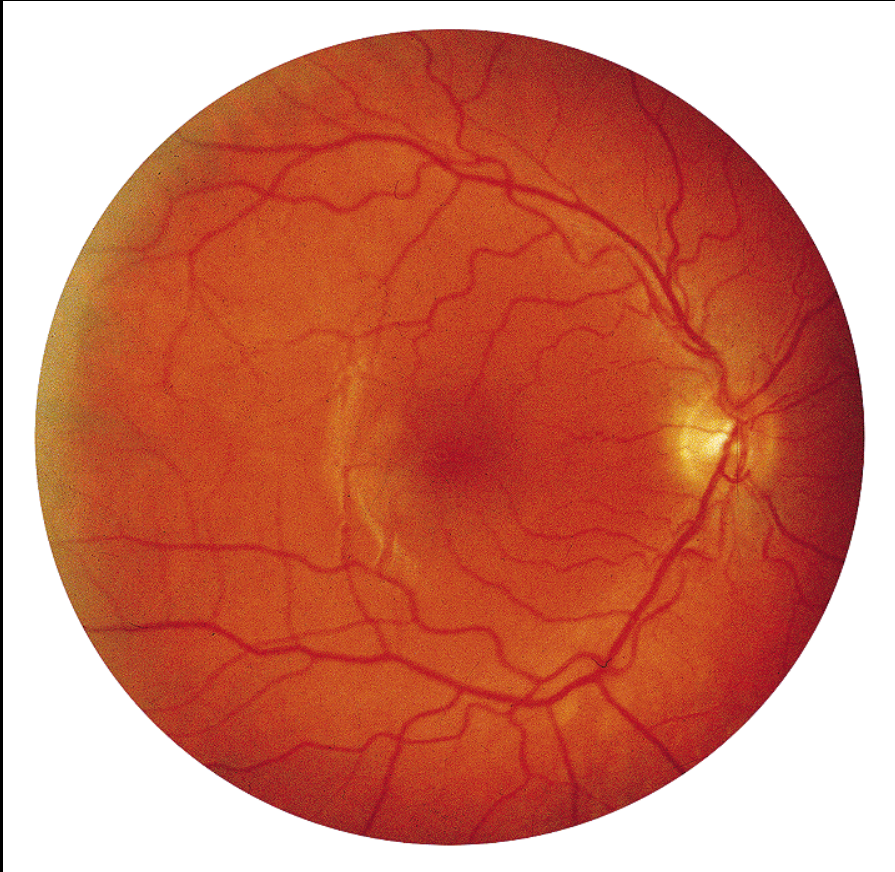
- ✓ 120 million
- ✓ primary source of visual information at night
- ✓ used in peripheral vision

### **Cones**

- ✓ 7 million
- ✓ detection of color
- ✓ central fovea – responsible for central vision

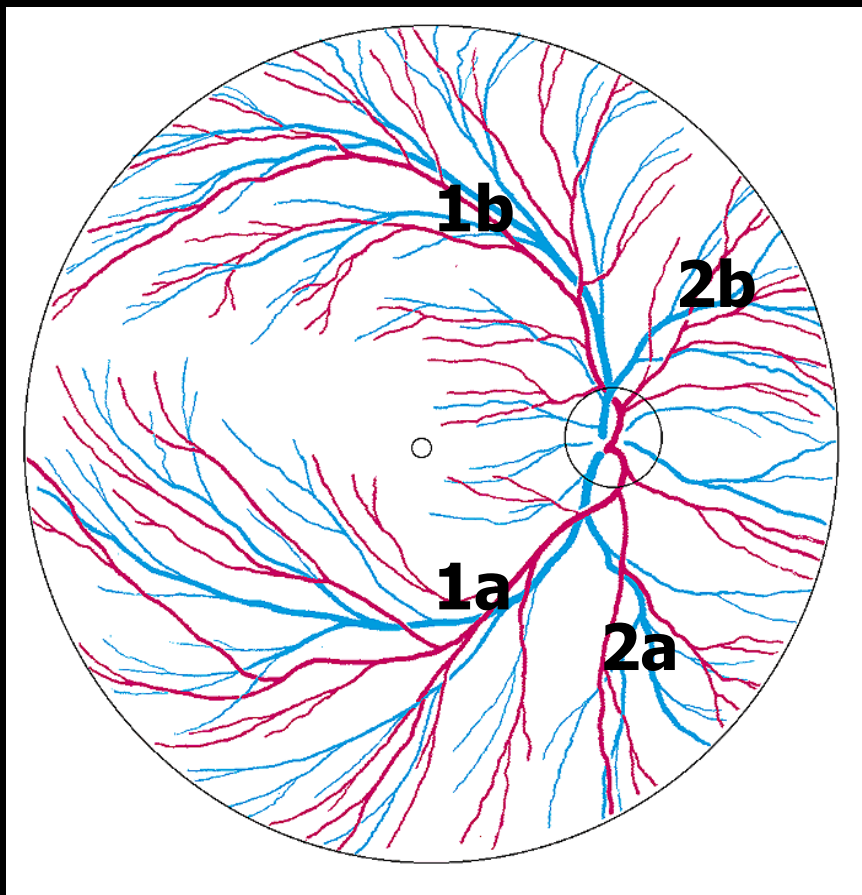
# Ophthalmoscopy

**Fundus** - OCULA DEXTRA (OD)



**Discus (papilla) n.  
optici**

**Macula lutea + fovea centralis**  
- the area of most acute vision

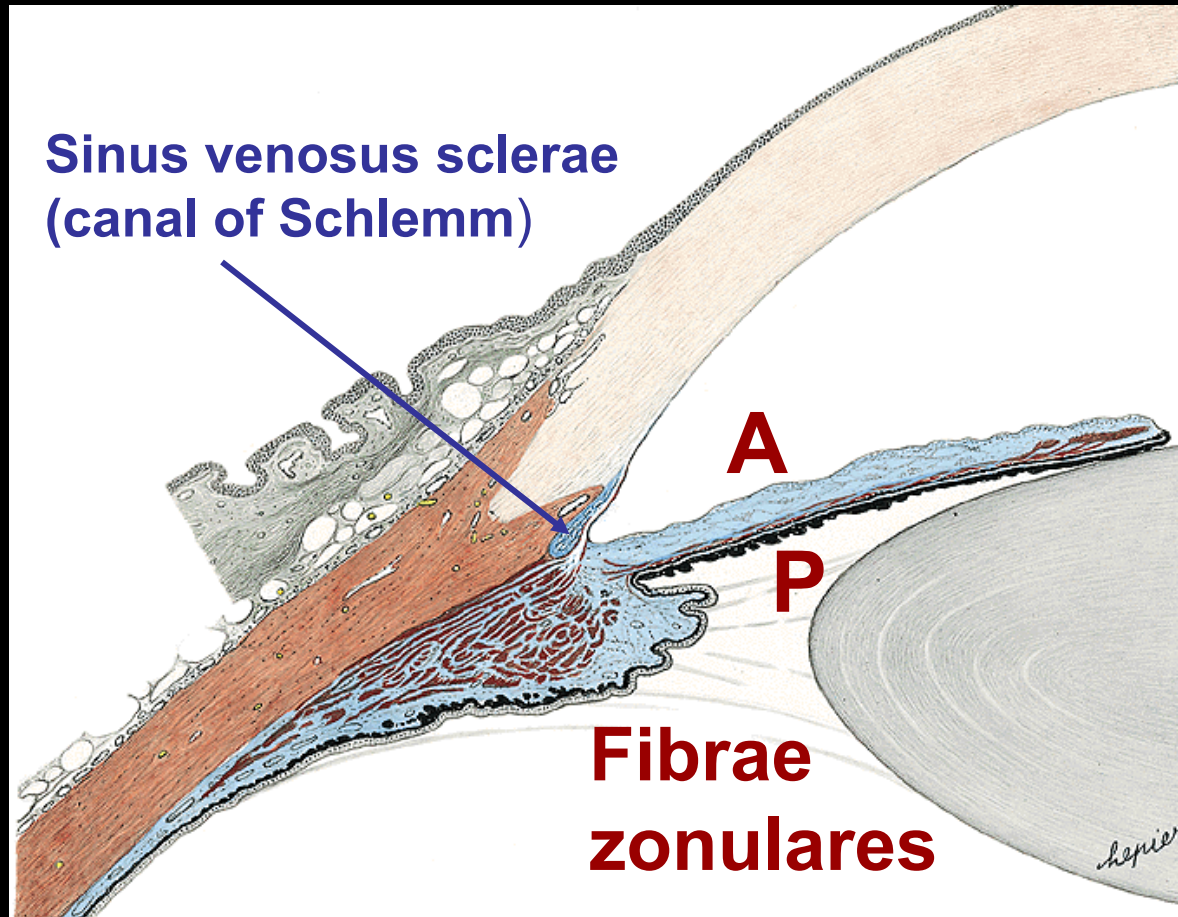


**A. et v. centralis retinae**

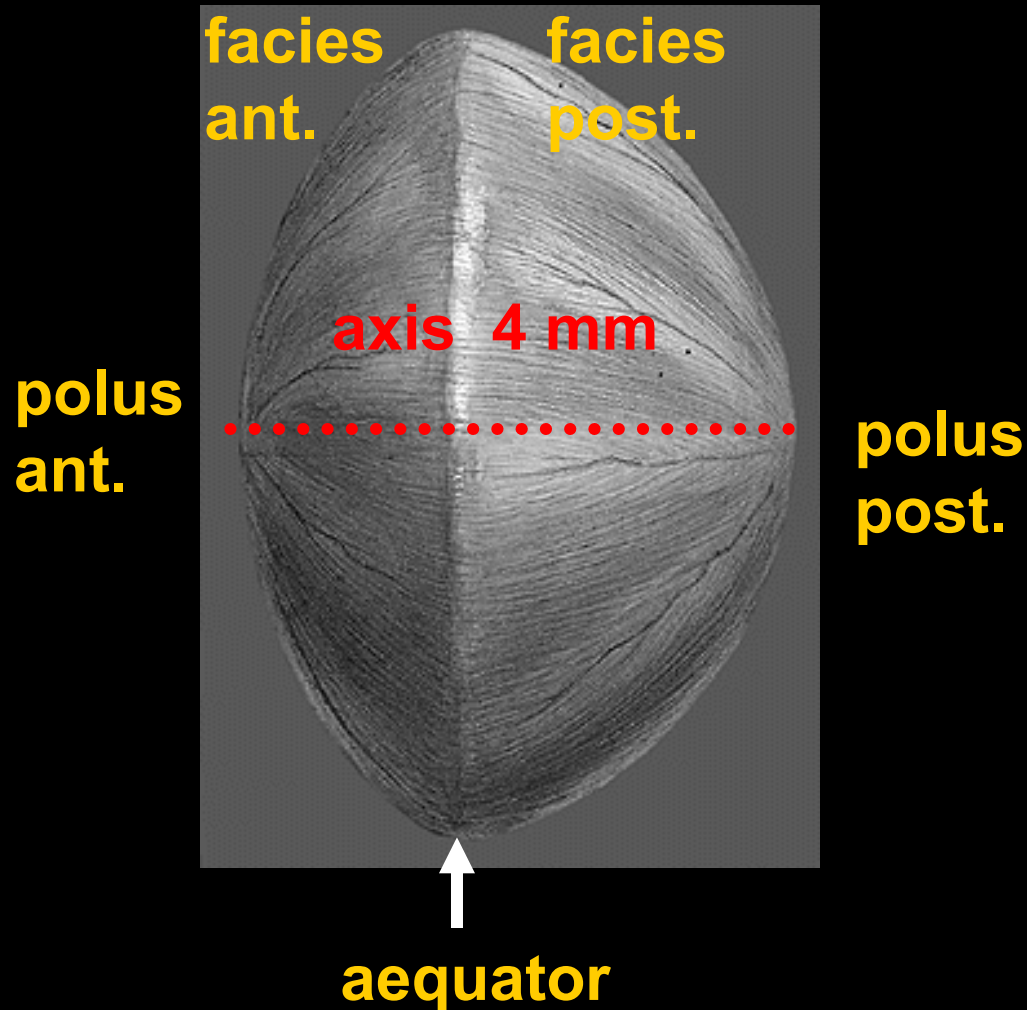
**1a,b** a. et v. temporales

**2a,b** a. et v. nasales

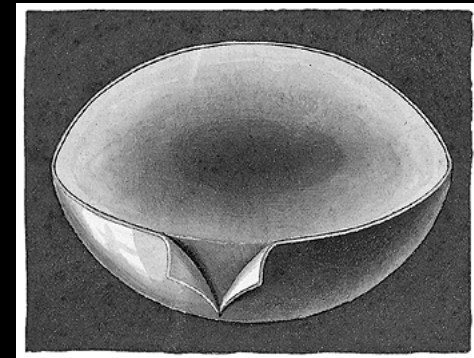
**Chambers - camera bulbi ant. et post.**  
**Aqueous humor - humor aquosus**



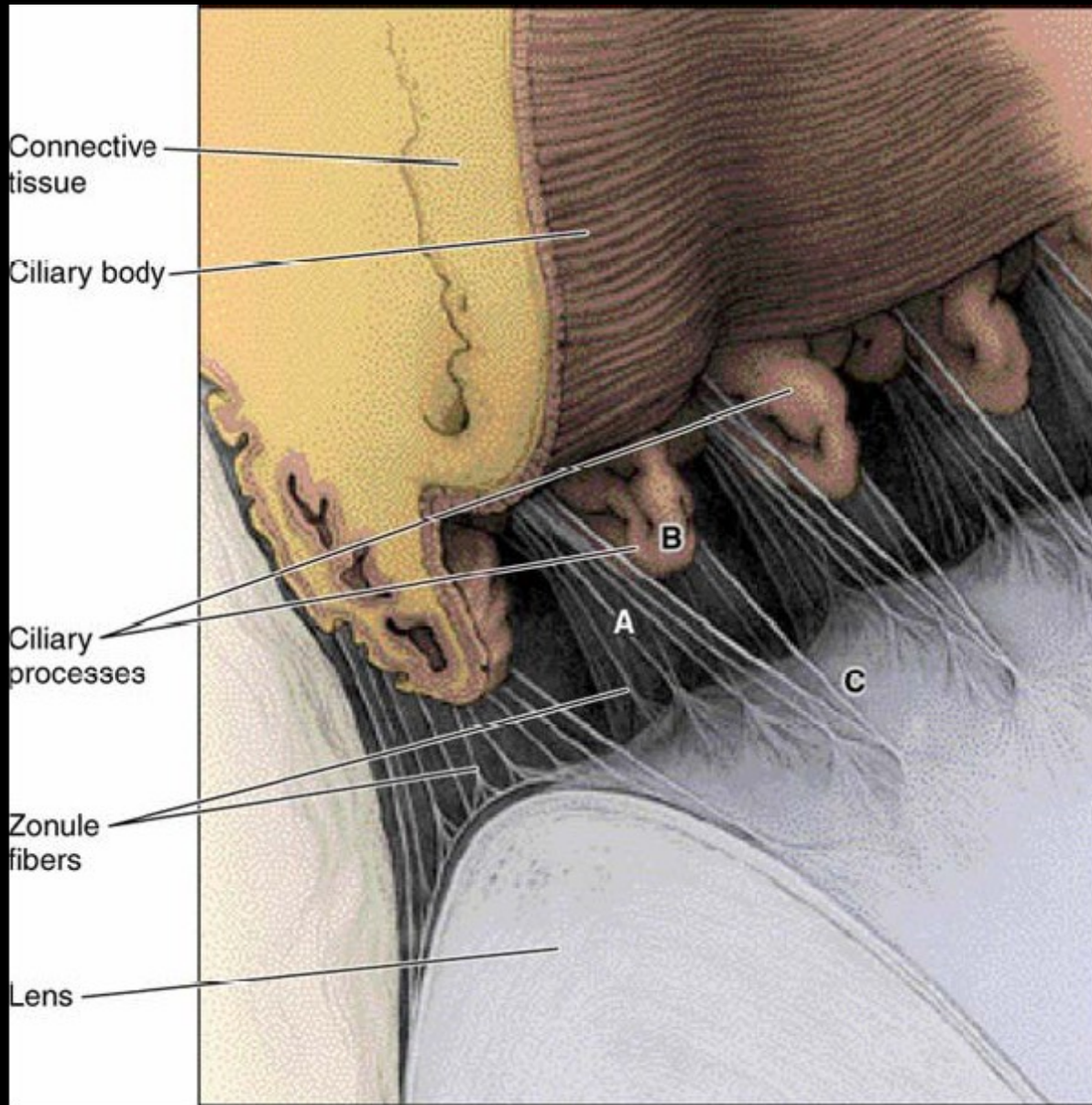
# Lens



Optical power  
+ 10 - 17 dioptries



- capsula lentis
- cortex lentis
- nucleus lentis



Connective tissue

Ciliary body

Ciliary processes

Zonule fibers

Lens

B

A

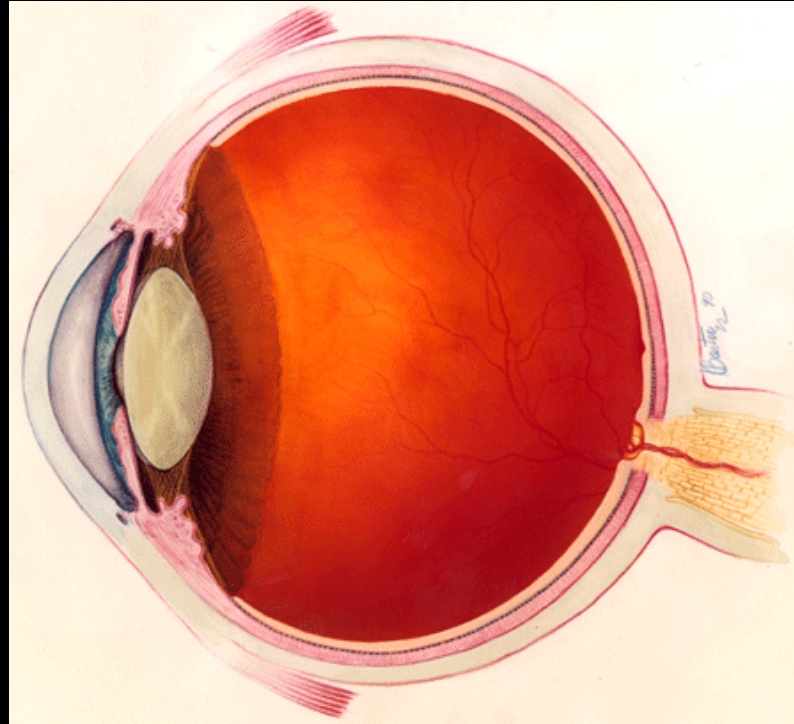
C

# Cataracts



- ✓ loss of transparency
- ✓ cloudiness
- ✓ ageing process

# Vitreous chamber: **vitreous humor, vitreous body**



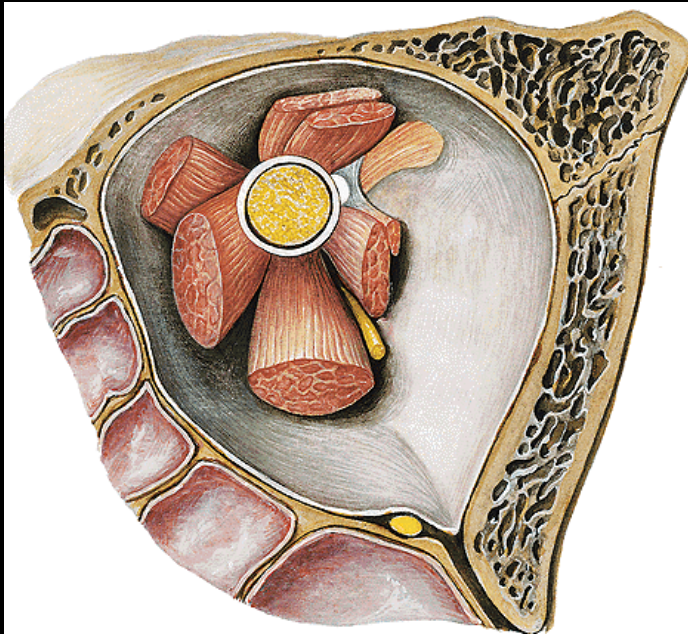
- ✓ **jelly-like substance with watery fluid**
- ✓ **holds the retina in place**
- ✓ **supports the lens**



# Extraocular muscles

## Smooth

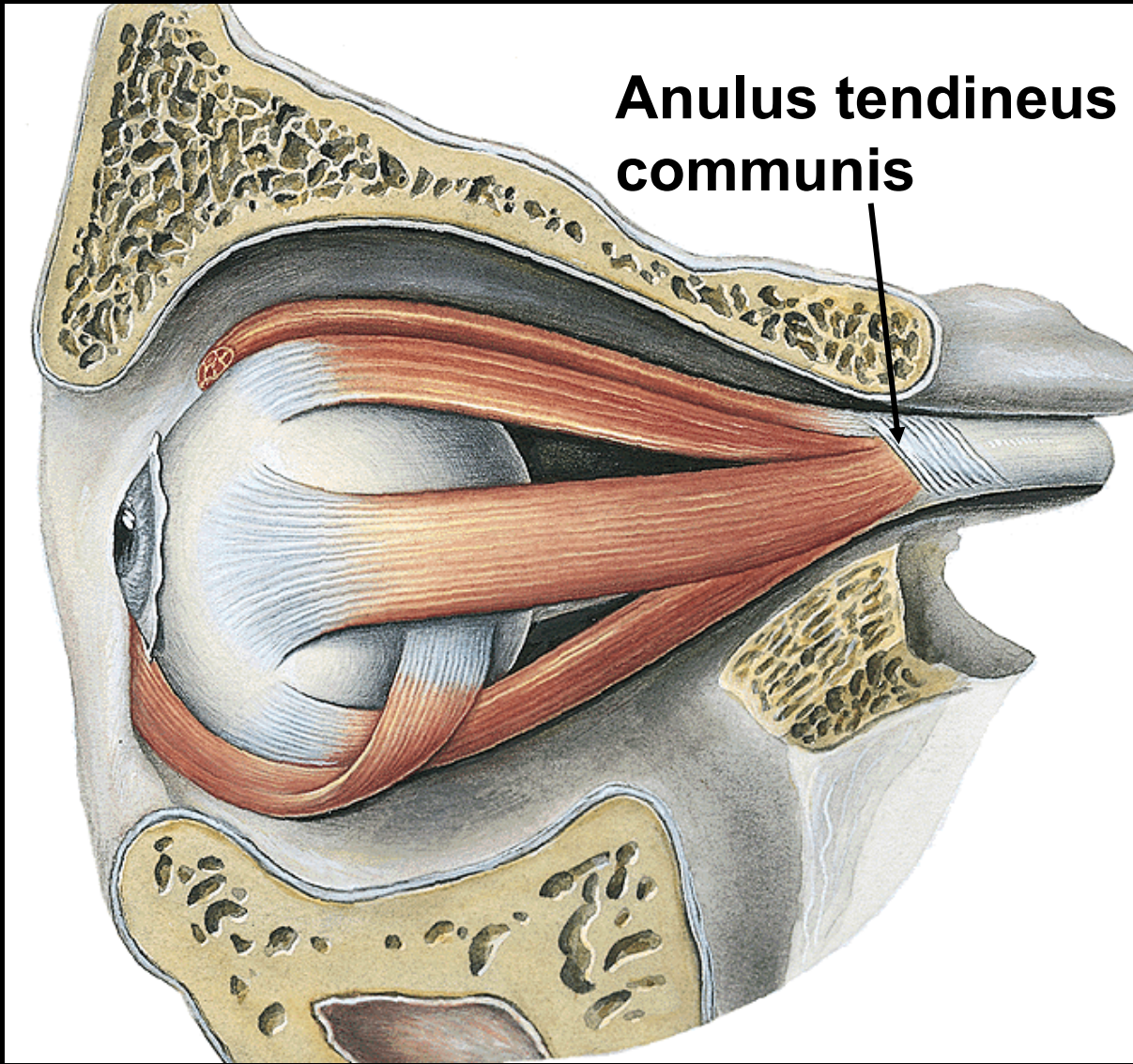
- m. orbitalis (**symp.**) Palsy = **Enophthalmus**
- mm. tarsales (**symp.**) = **Ptosis**

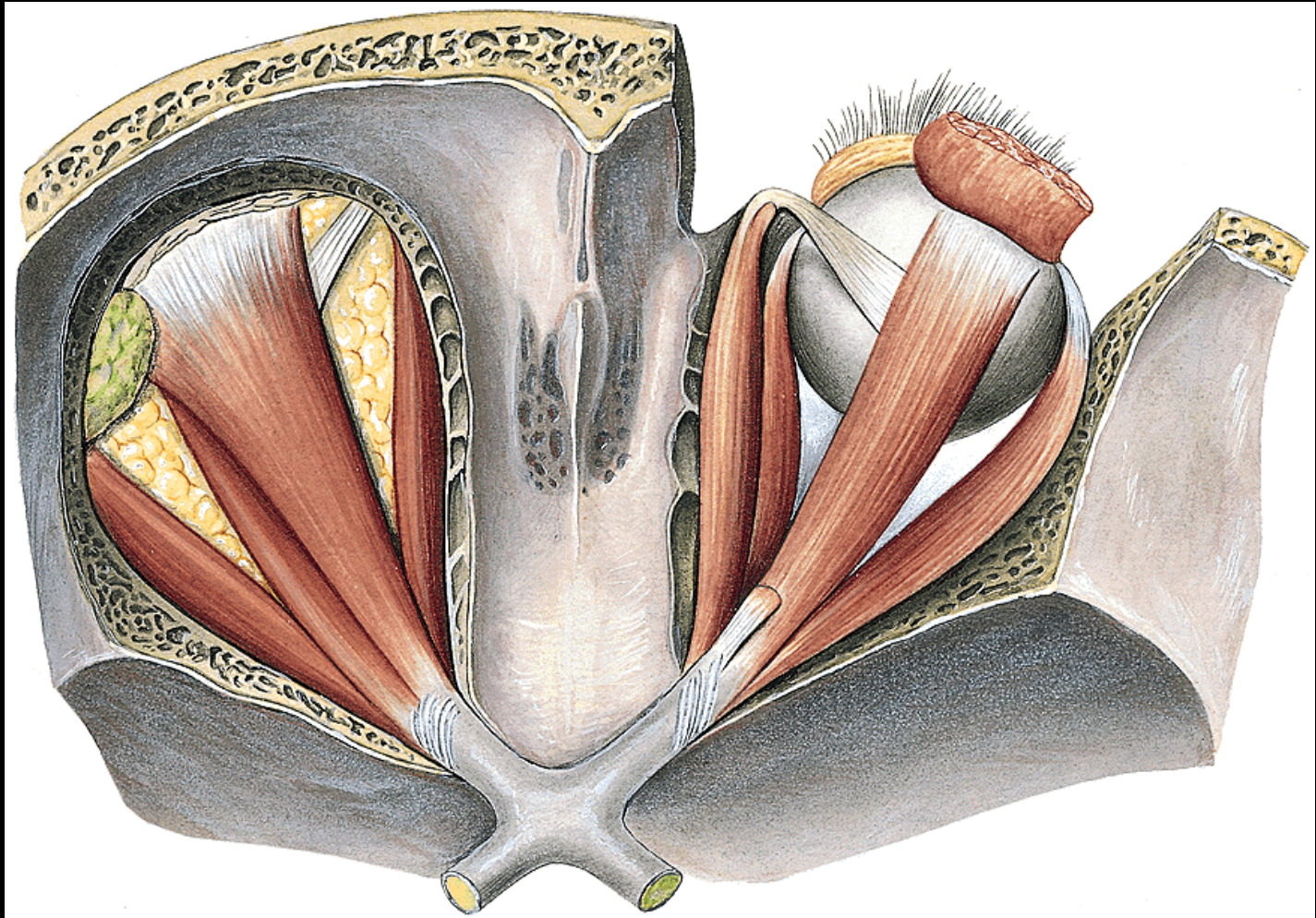


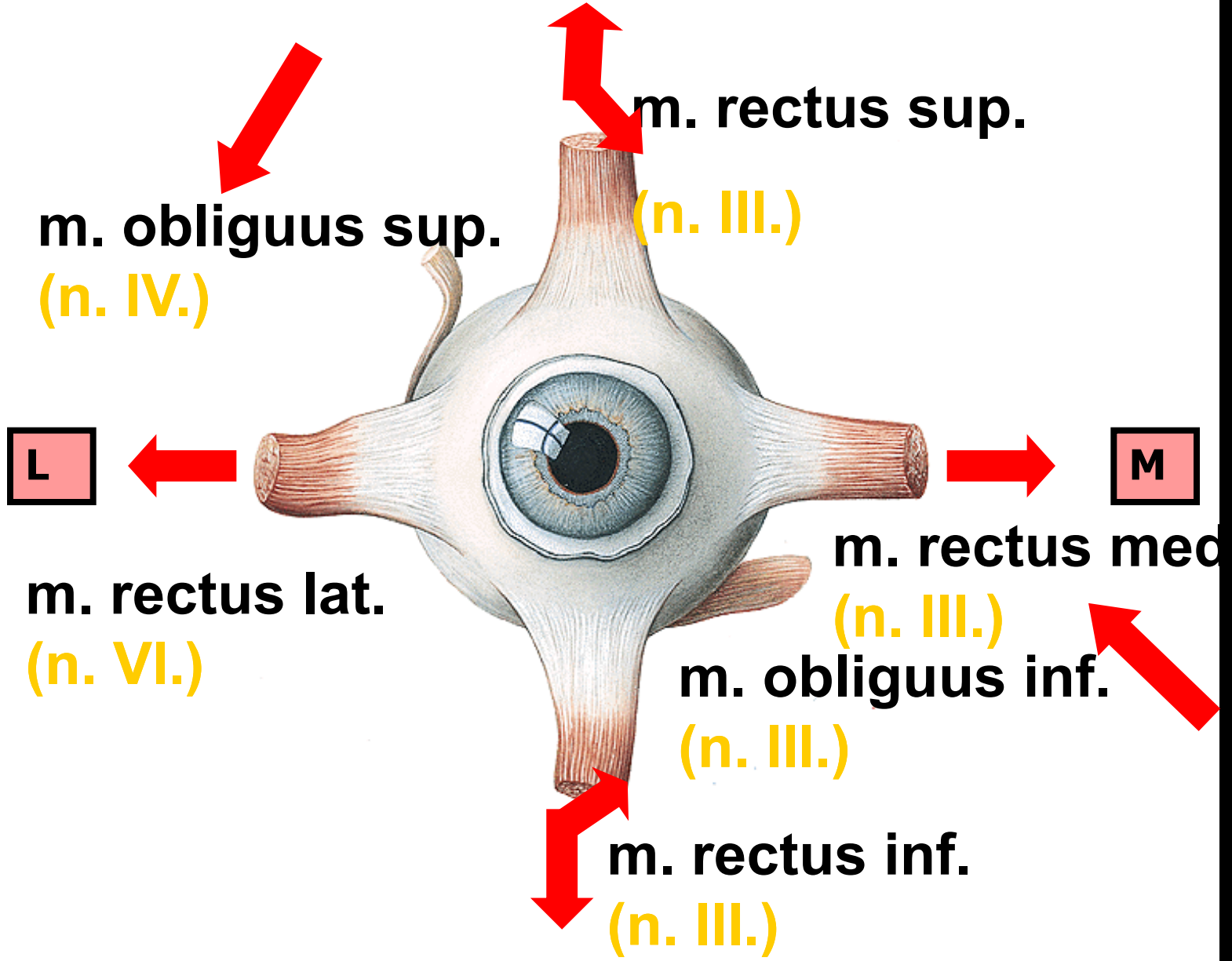
## Skeletal

- m. rectus bulbi sup., inf., med., lat.
- m. obliquus sup., inf.
- m. levator palp. sup.

**Anulus tendineus  
communis**







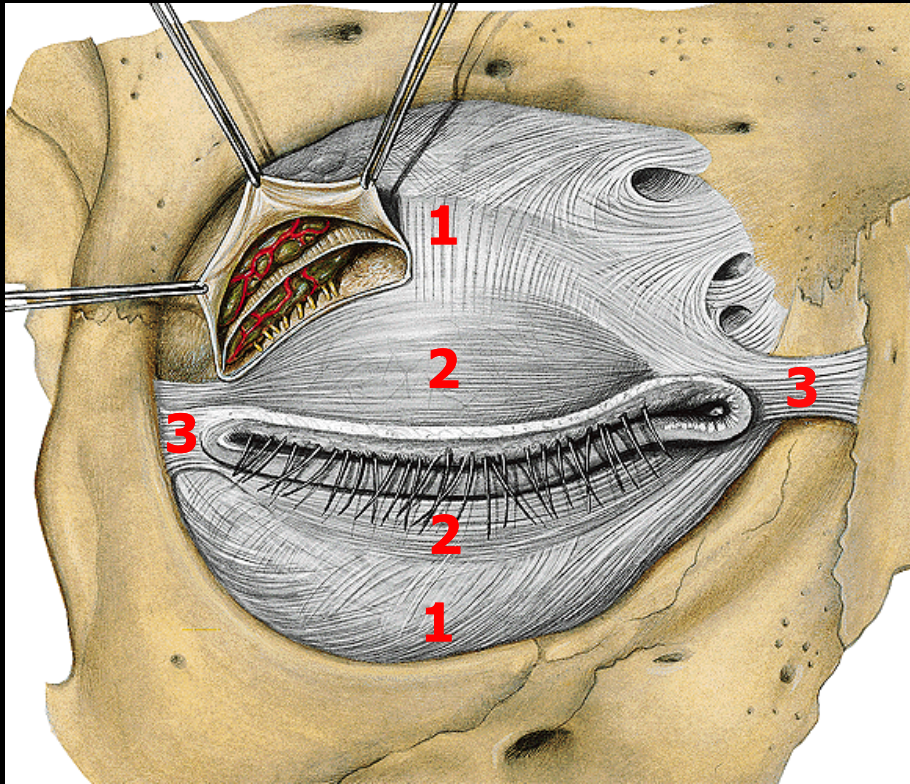
# **Eyelids - palpebrae**

## **Conjunctiva**



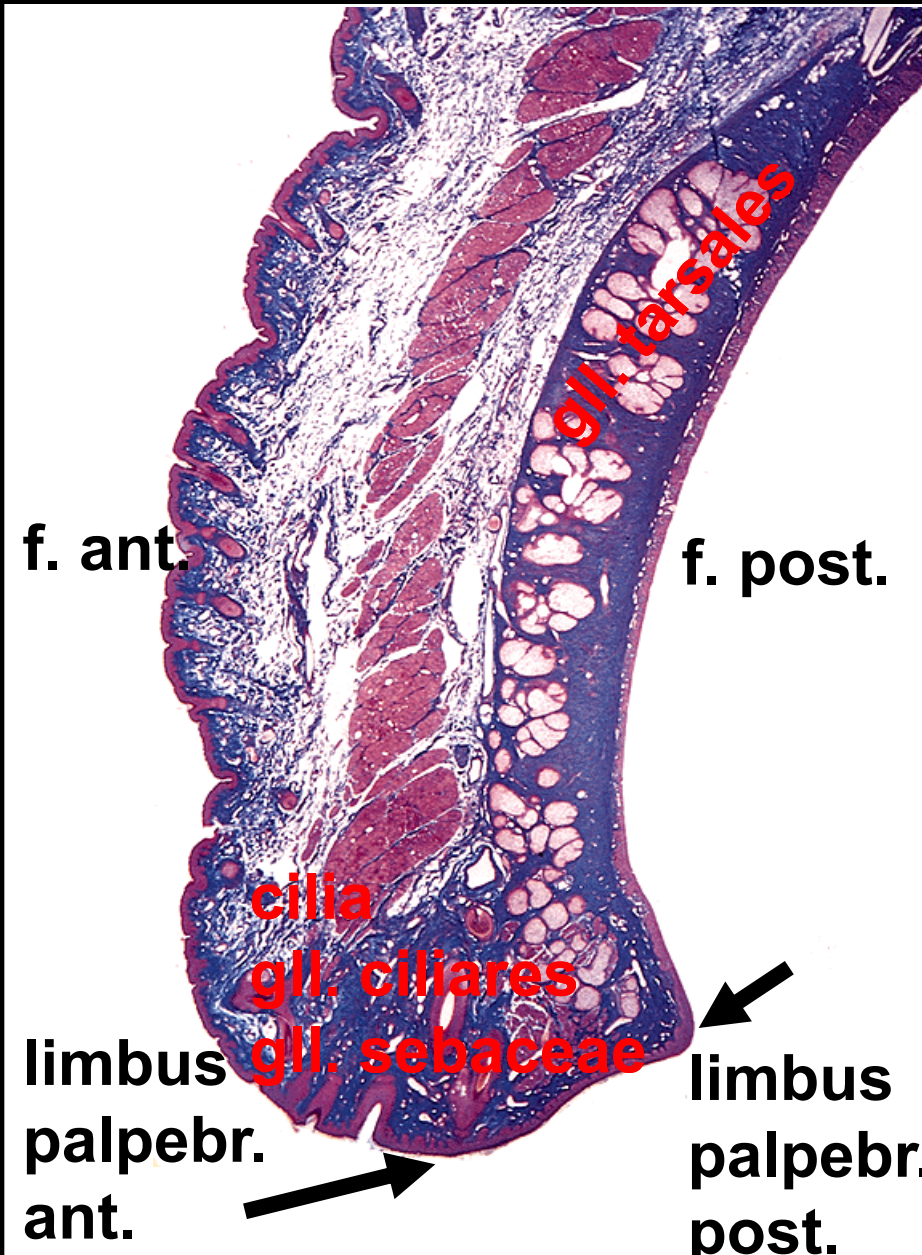
- palpebra sup. et inf.
- commisurae palpebr.
- rima palpebrarum
- angulus oculi med. et lat.
- facies ant. et post.

# Structure of the eyelid



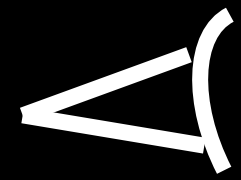
- 1 **septum orbitale**
- 2 **tarsus sup. et inf.**
- 3 **lig. palp. med. et lat.**





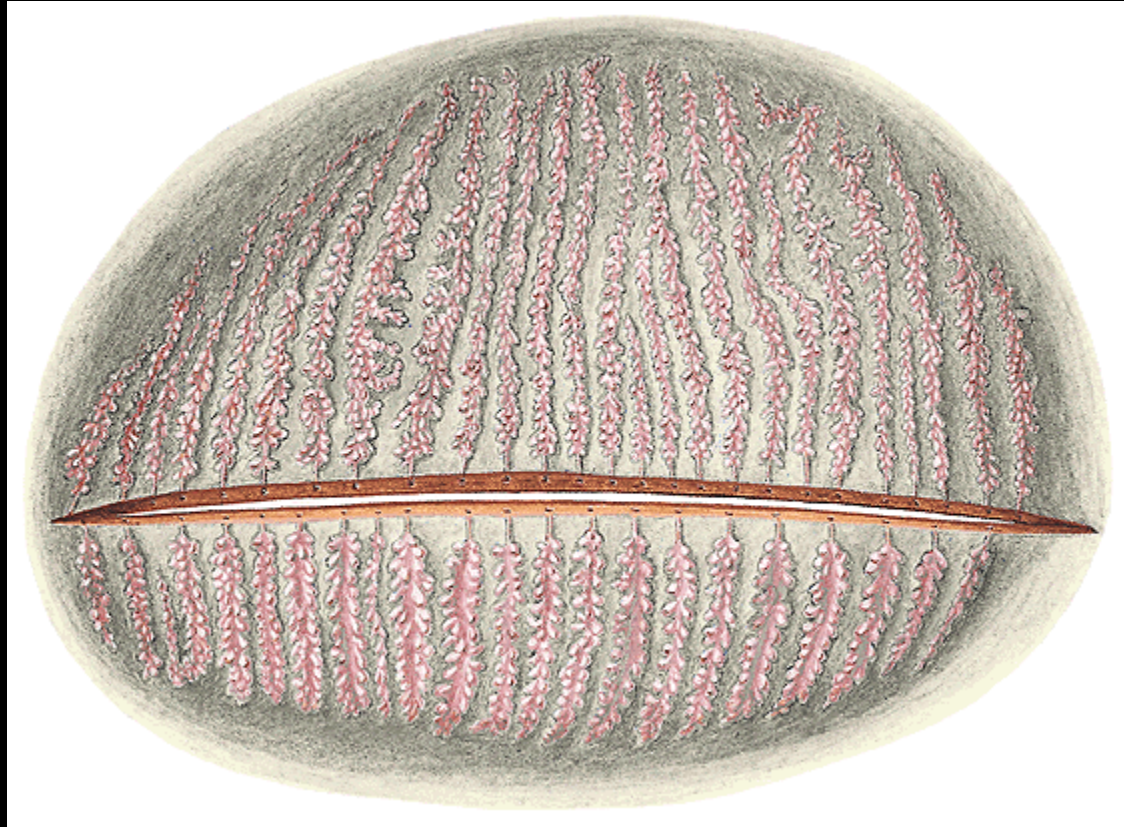
skin

- m. orbicularis oculi
- septum orbitale + tarsi
- conjunctiva



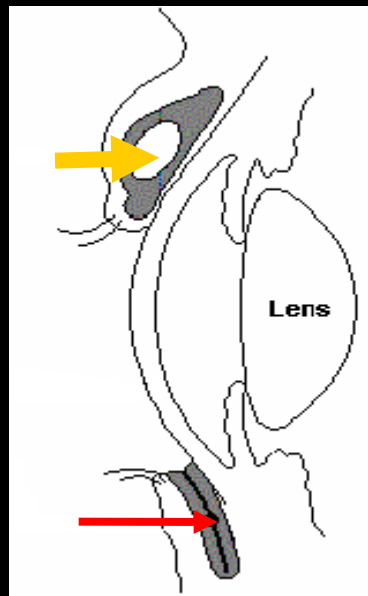
**Rivus lacrimalis**

# GII. tarsales

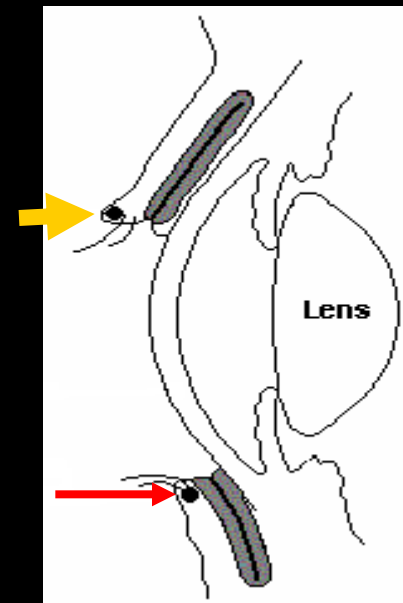


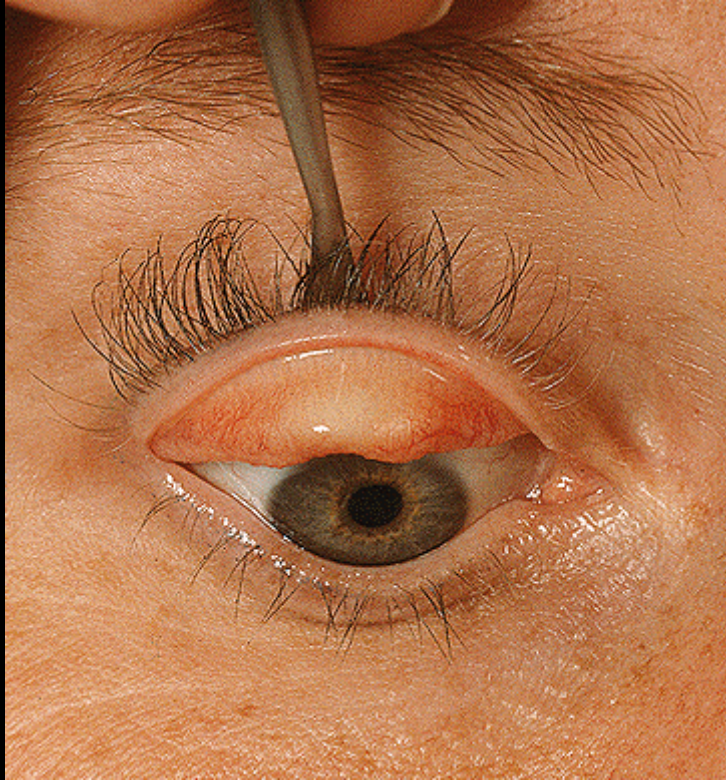


## Chalazion (tarsal chalazion)



## Hordeolum (sty)



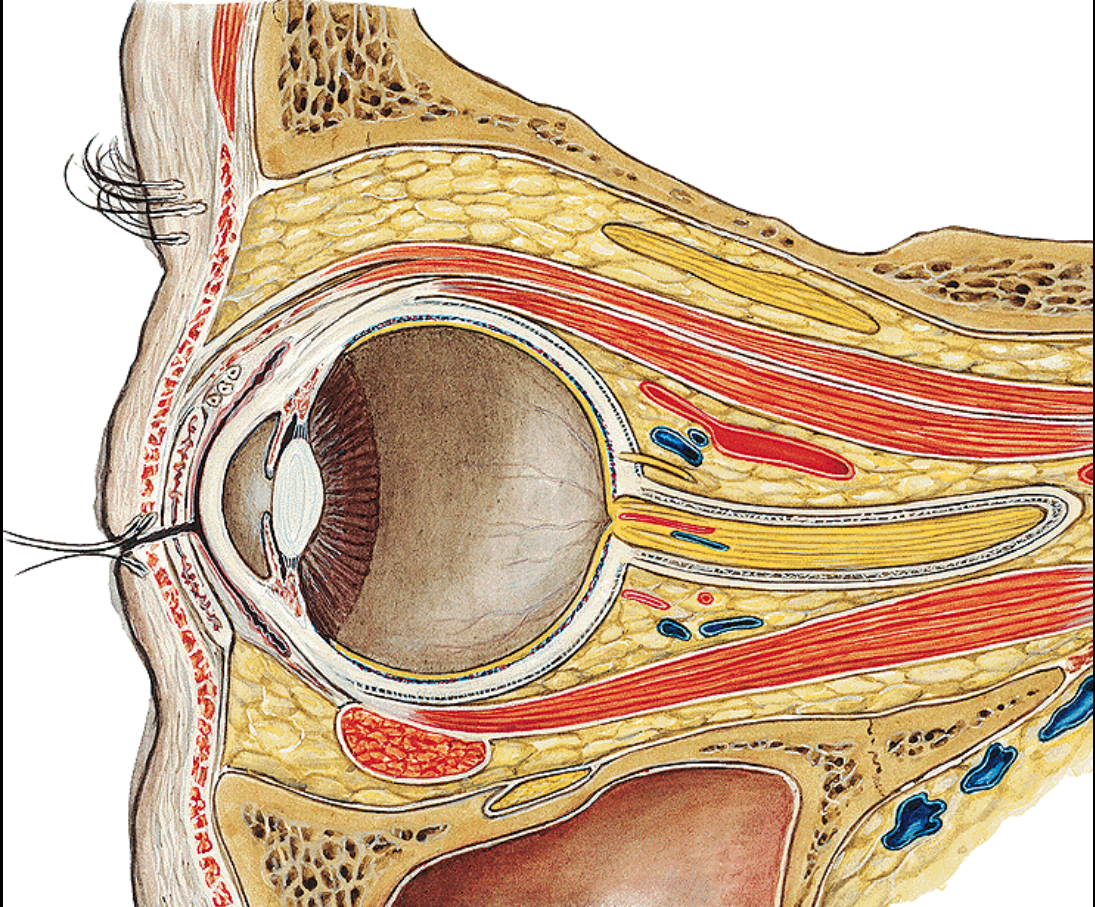


## **Tunica conjunctiva**

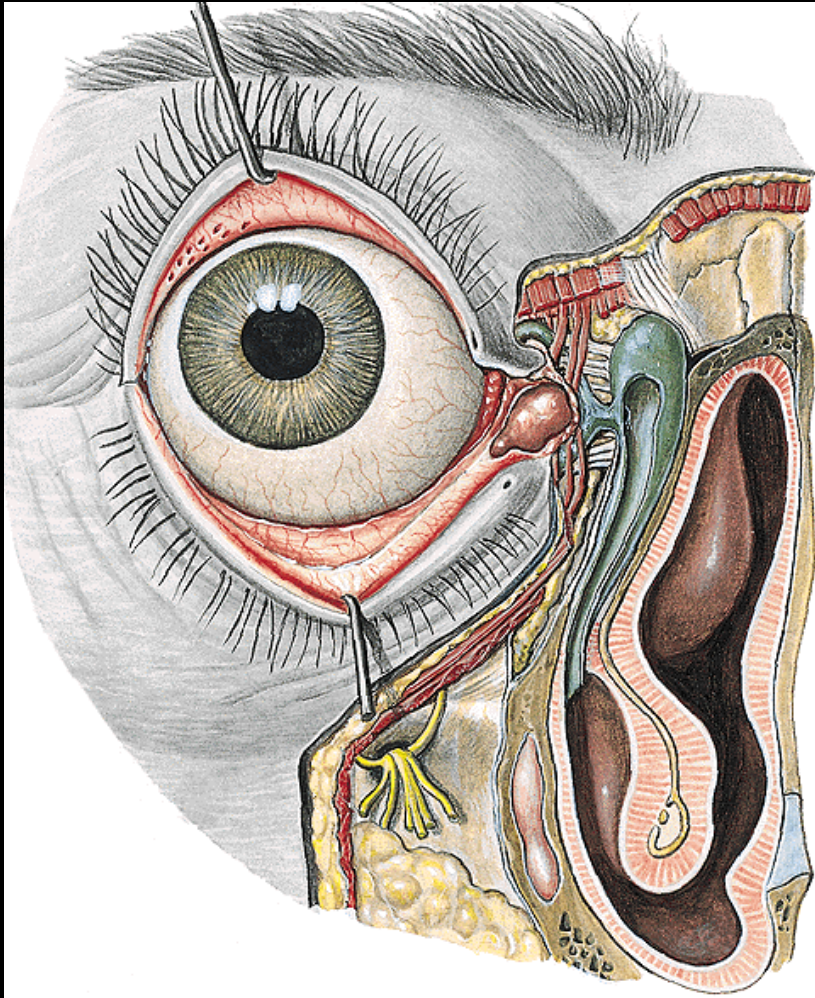
**tun. conj. palpebrarum**

**fornix conjunct. sup. et inf.**

■ **tun. conj. bulbi**



# Apparatus lacrimalis



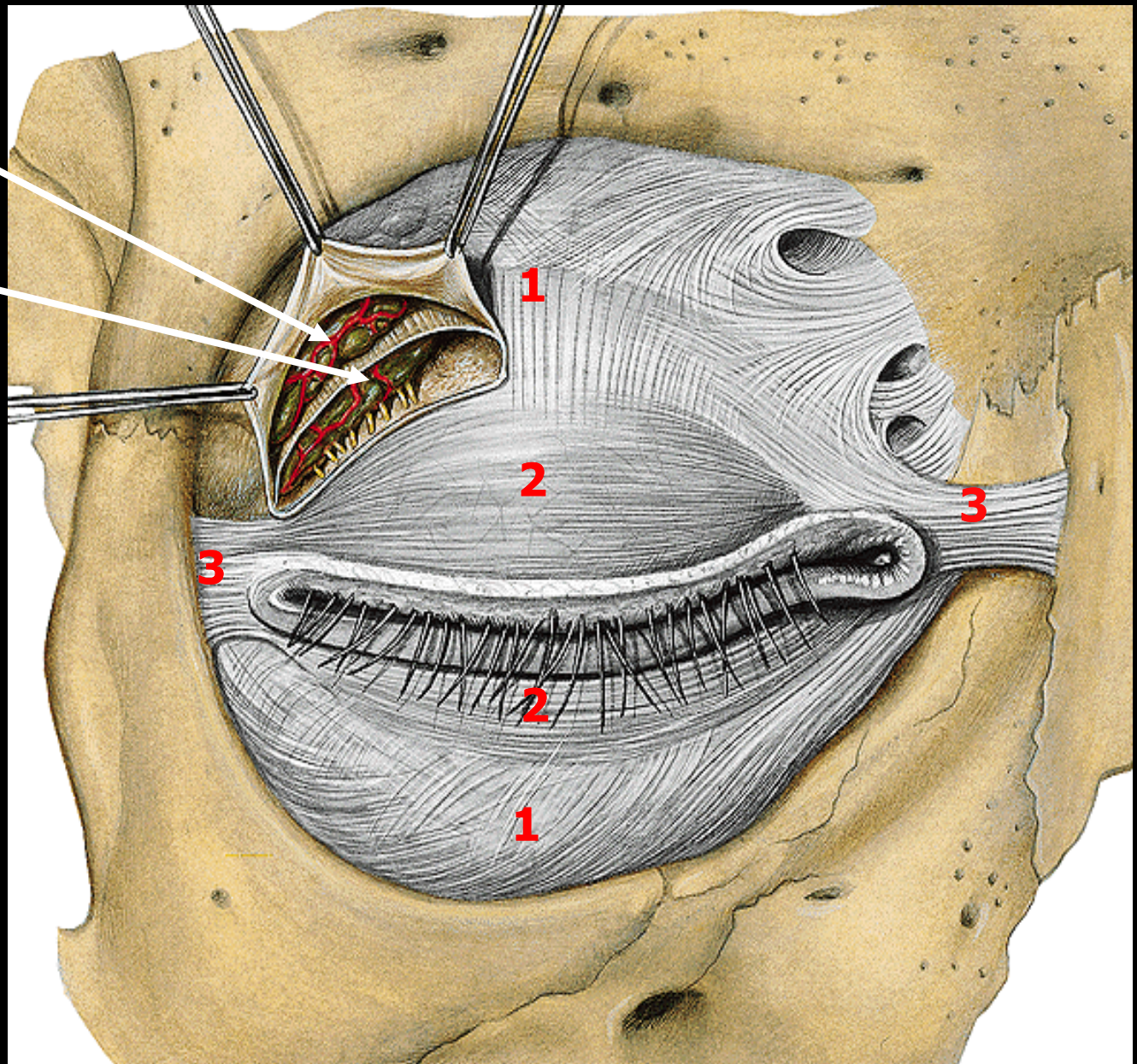
## Glandula lacrimalis

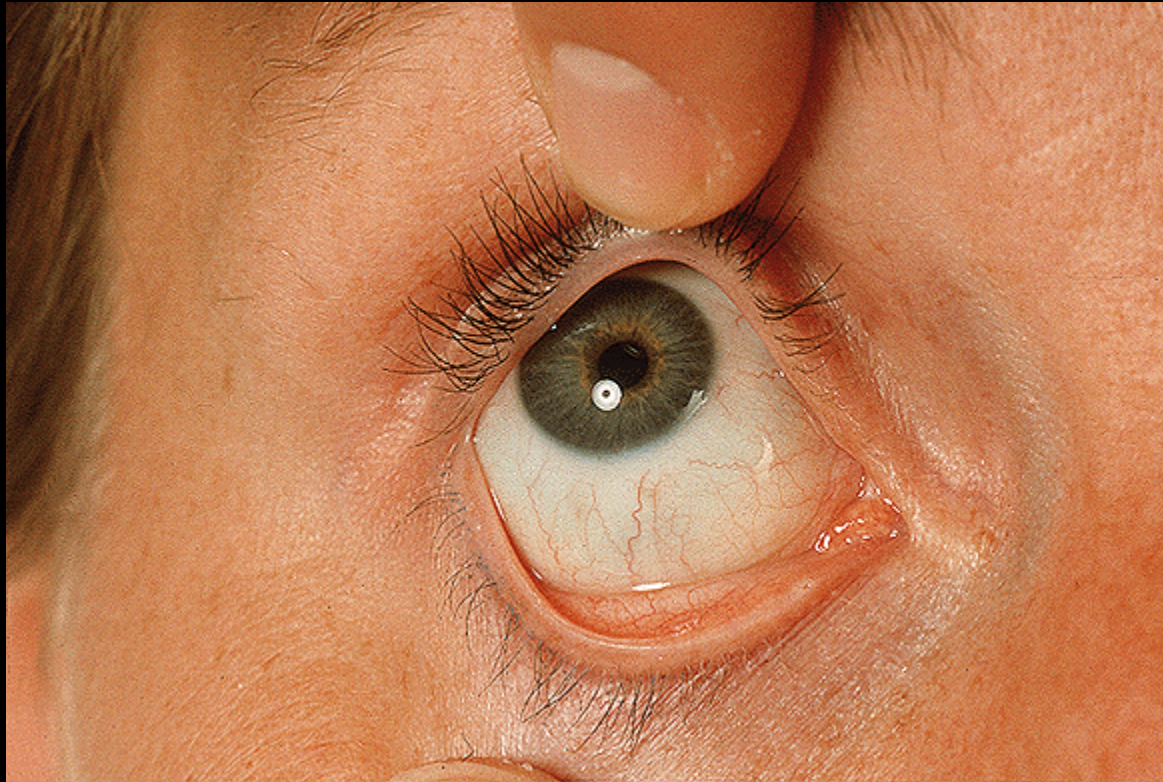
- > ductuli excretorii
- > lacus lacrimalis

- papillae lacrimales
- puncta lacrimalia
- canaliculi lacrimales
- saccus lacrimalis
- ductus nasolacrimalis

**Pars orbitalis**

**Pars palpebralis**



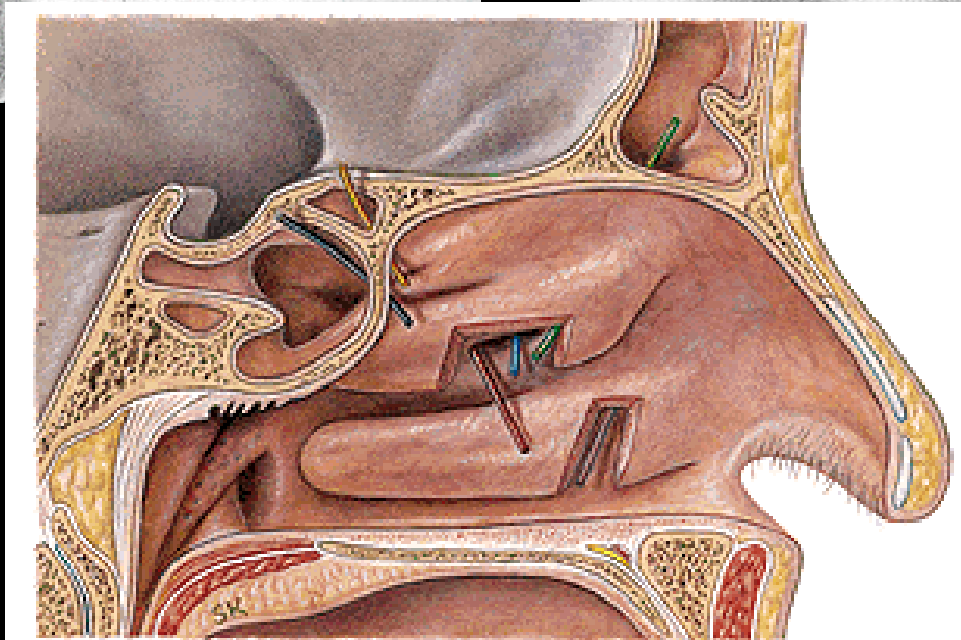
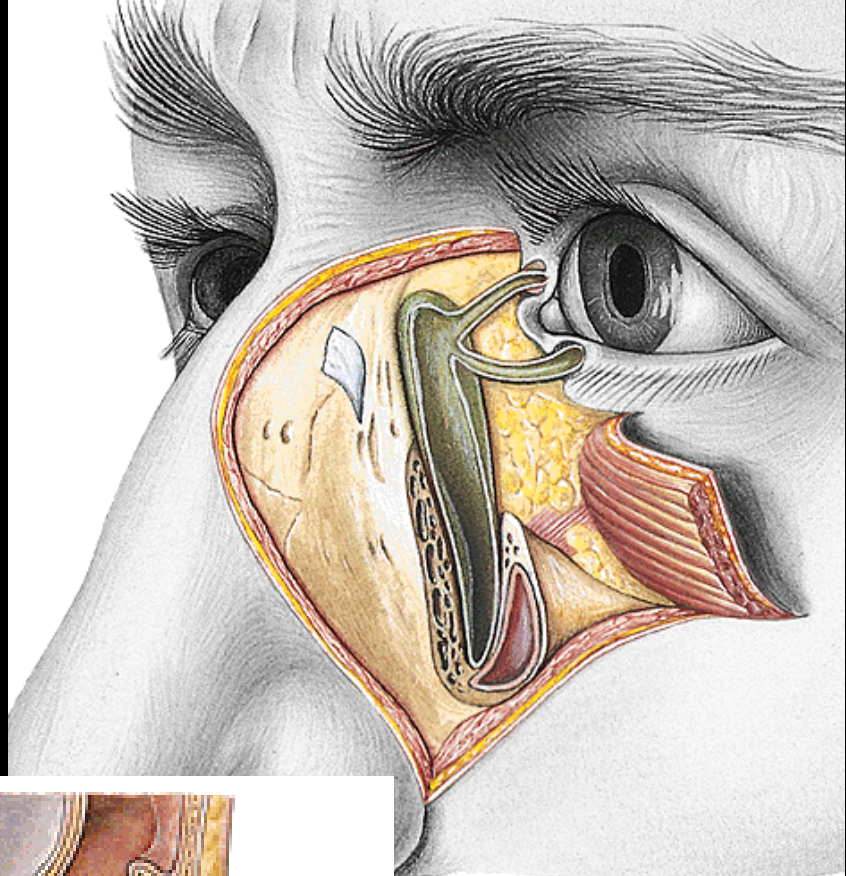
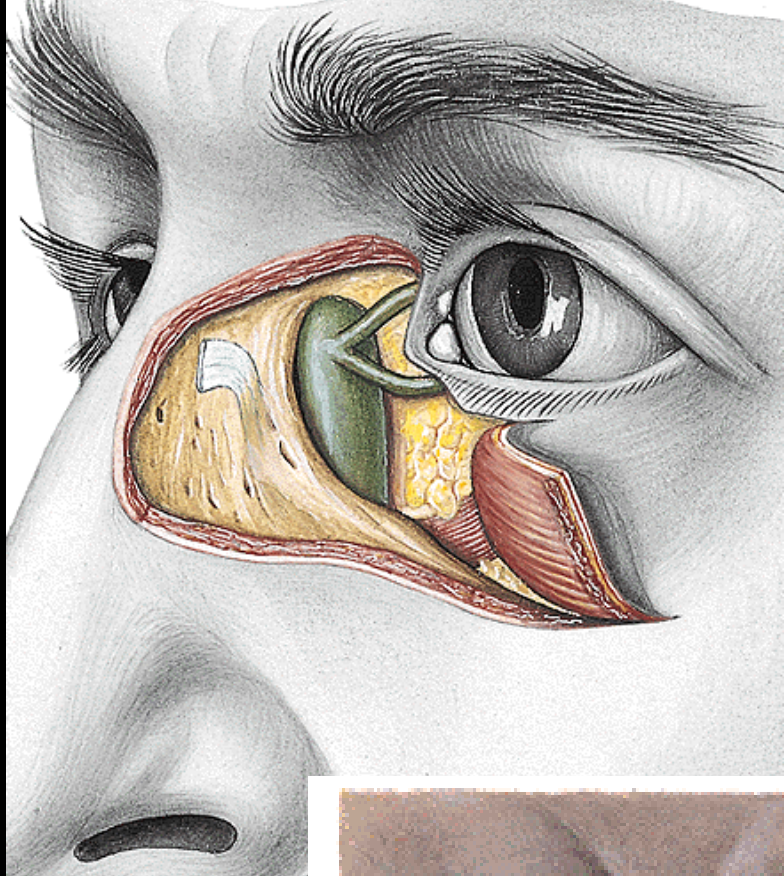


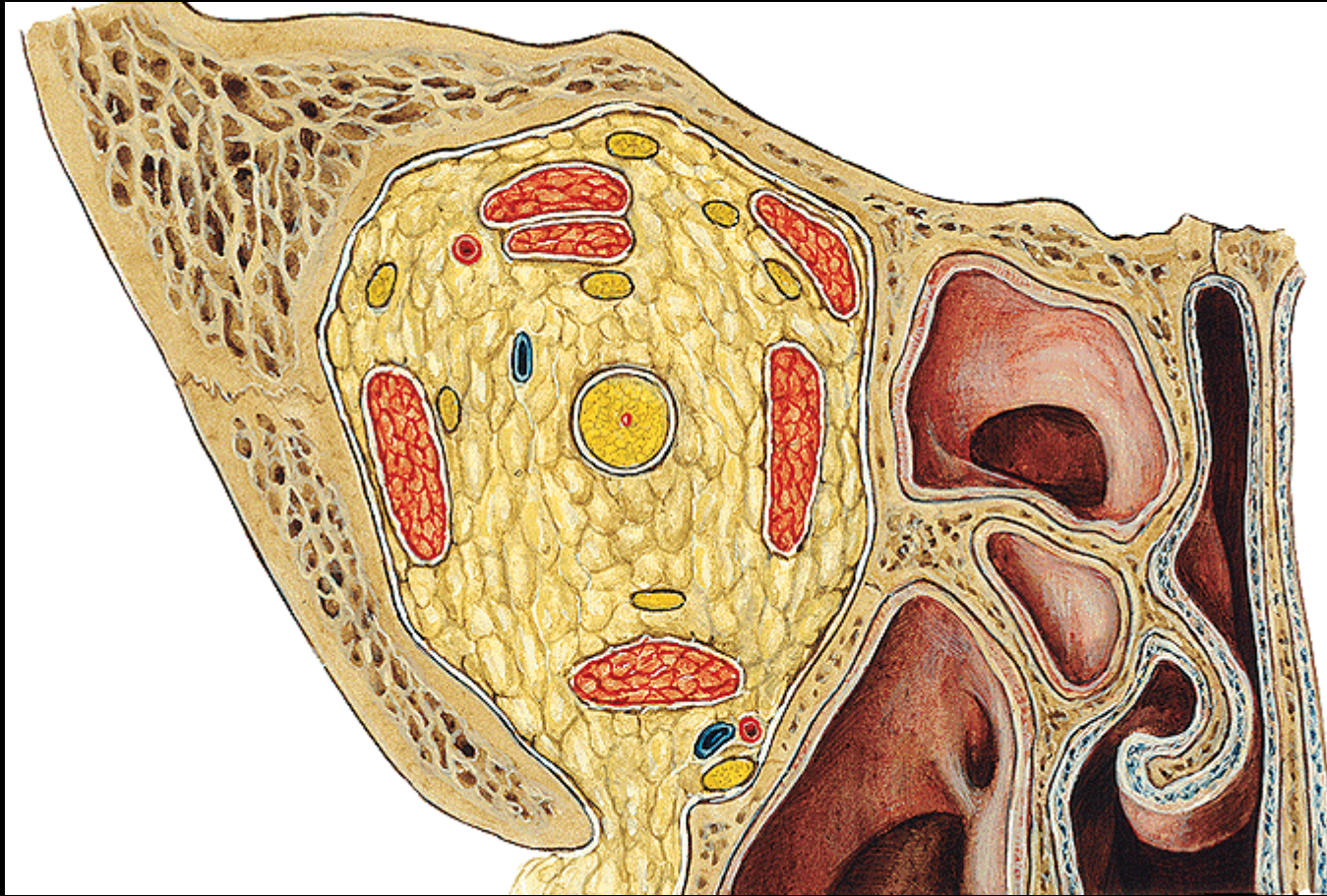
**Angulus medialis:**

**lacus lacrimalis**

■ **caruncula lacrimalis**

■ **plica semilun. conjunctivae**

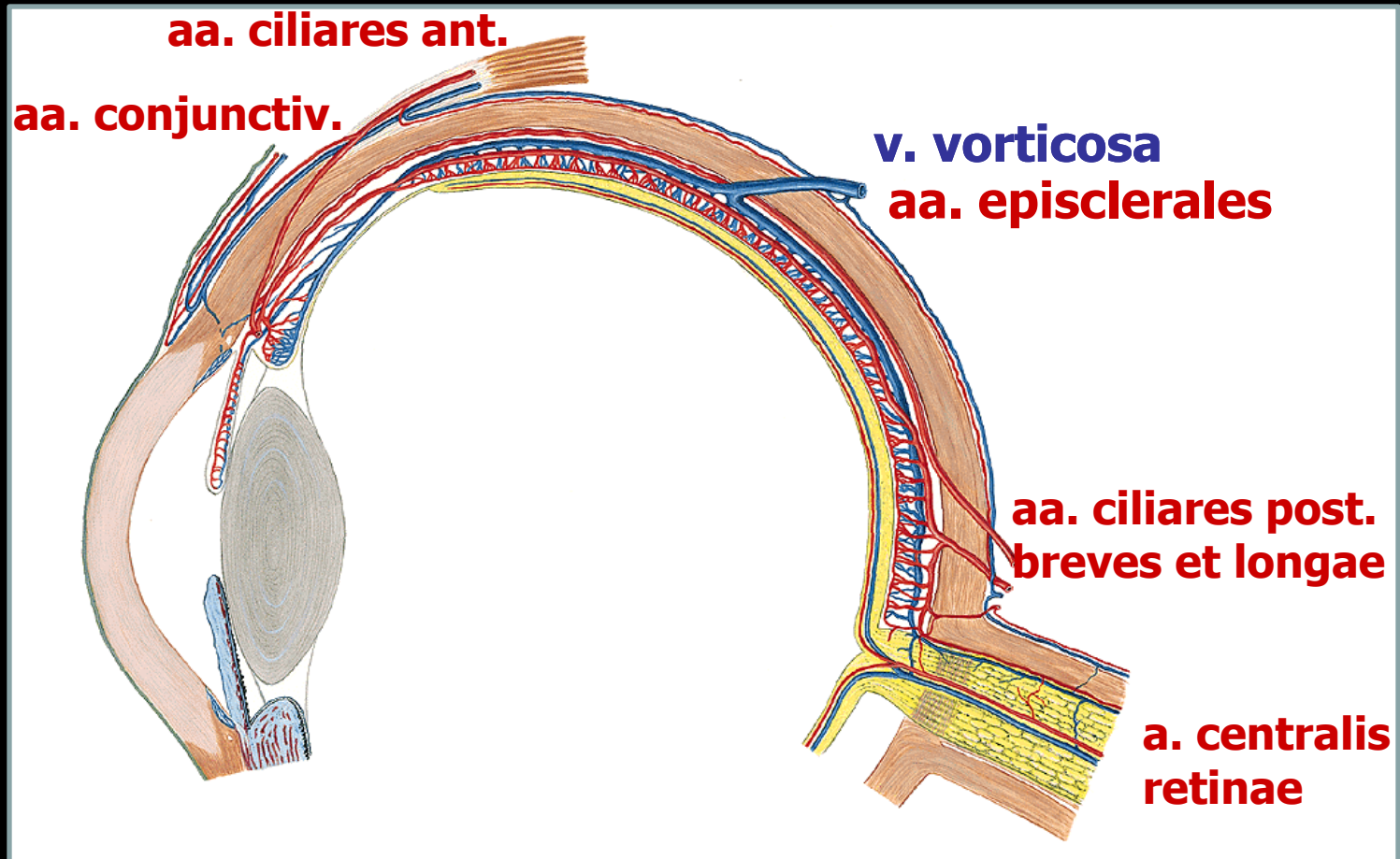


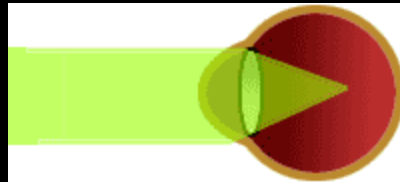




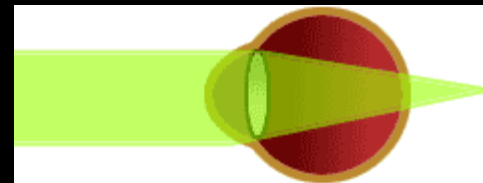
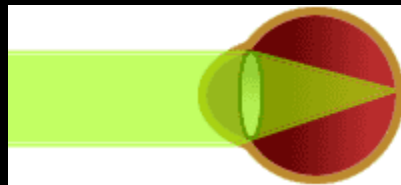
# Blood supply

**A. ophthalmica**  
**V ophthalmica sup.**  
**V. ophthalmica inf.**





myopia - shortsightedness



hyperopia - hypermetropia -  
longsightedness

Illustrations and photographs were copied from:  
**Atlas der Anatomie des Menschen/Sobotta.**  
**Putz,R., und Pabst,R. 20. Auflage. München:**  
**Urban & Schwarzenberg, 1993**  
**Netter: Interactive Atlas of Human Anatomy.**  
**Windows Version 2.0**