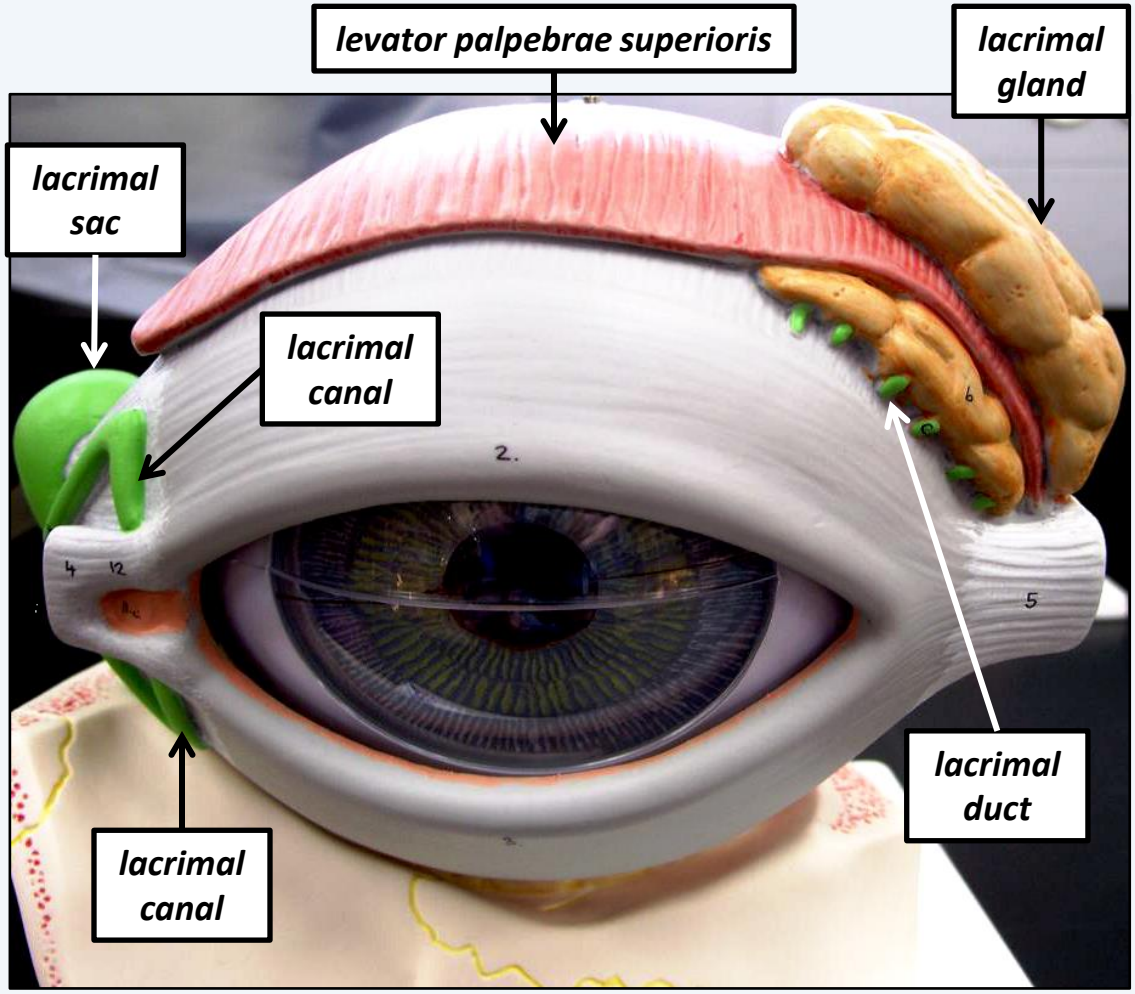
BIOL 2401 Unit 4 Lab
Human Eye Study Guide

Use this study guide to review the structures of the human eye for Lab Exam 4

Information in this study guide corresponds to the "Introduction to the Human Eye" section in the lab-exam review

Eyelid & Lacrimal Apparatus

Anterior view of large left eye model shown



Eyelid

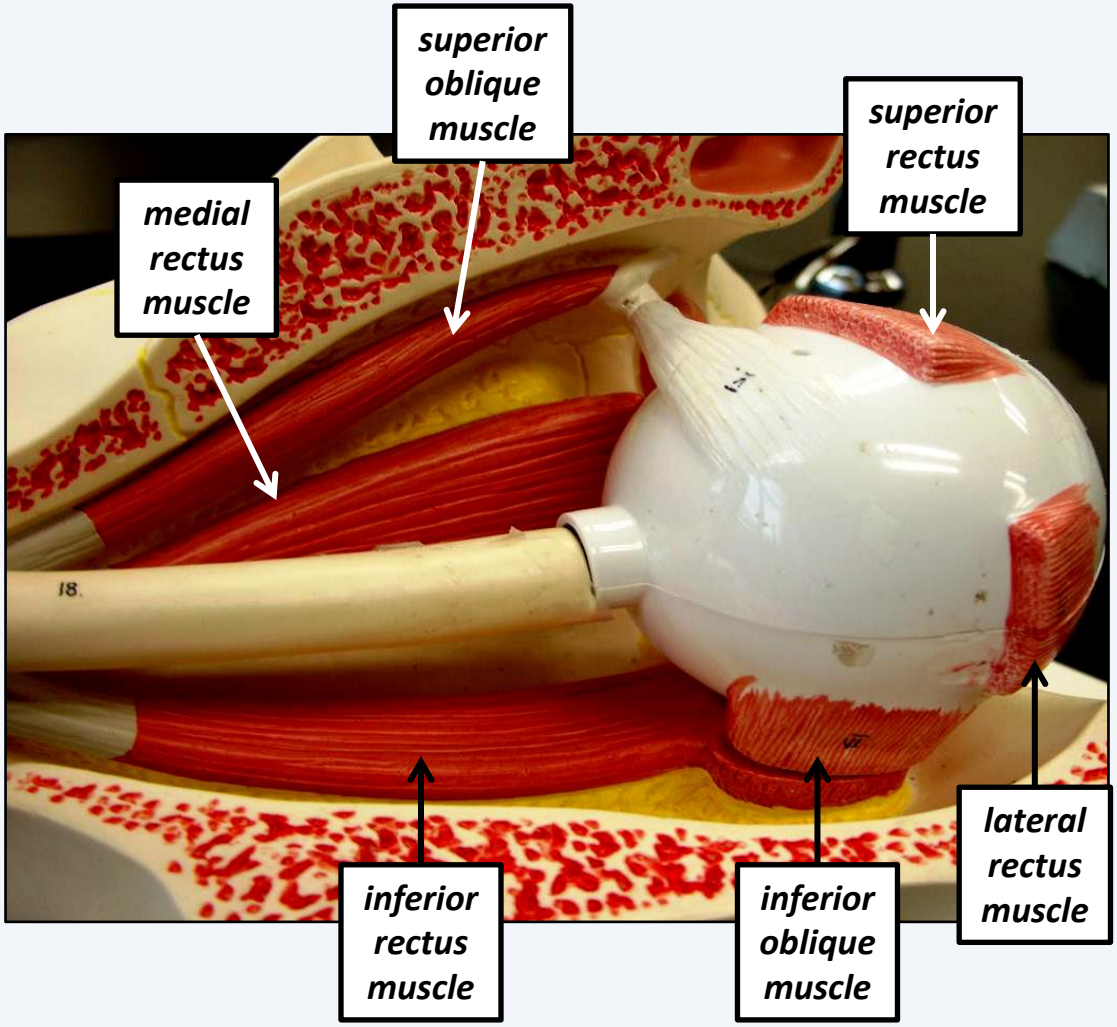
- **Levator palpebrae superioris**
  Functions to elevate eyelid

Lacrimal apparatus

- **Lacrimal gland**
  Functions to produce & secrete lacrimal fluid onto the surface of the upper eyelid
- **Lacrimal duct**
  Functions to drain lacrimal fluid onto the surface of the upper eyelid
- **Lacrimal canal**
  Functions to drain lacrimal fluid from eye into lacrimal sac
- **Lacrimal sac**
  Functions to drain lacrimal fluid from eye into the nasal cavity

Extrinsic Eye Muscles

Posterior view of small right eye model shown
Eyelid removed from model



- ***Superior rectus muscle***

  Functions to elevate eye & turn it medially

- ***Inferior rectus muscle***

  Functions to depress eye & turn it medially

- ***Medial rectus muscle***

  Functions to move eye medially

- ***Lateral rectus muscle***

  Functions to move eye laterally

- ***Superior oblique muscle***

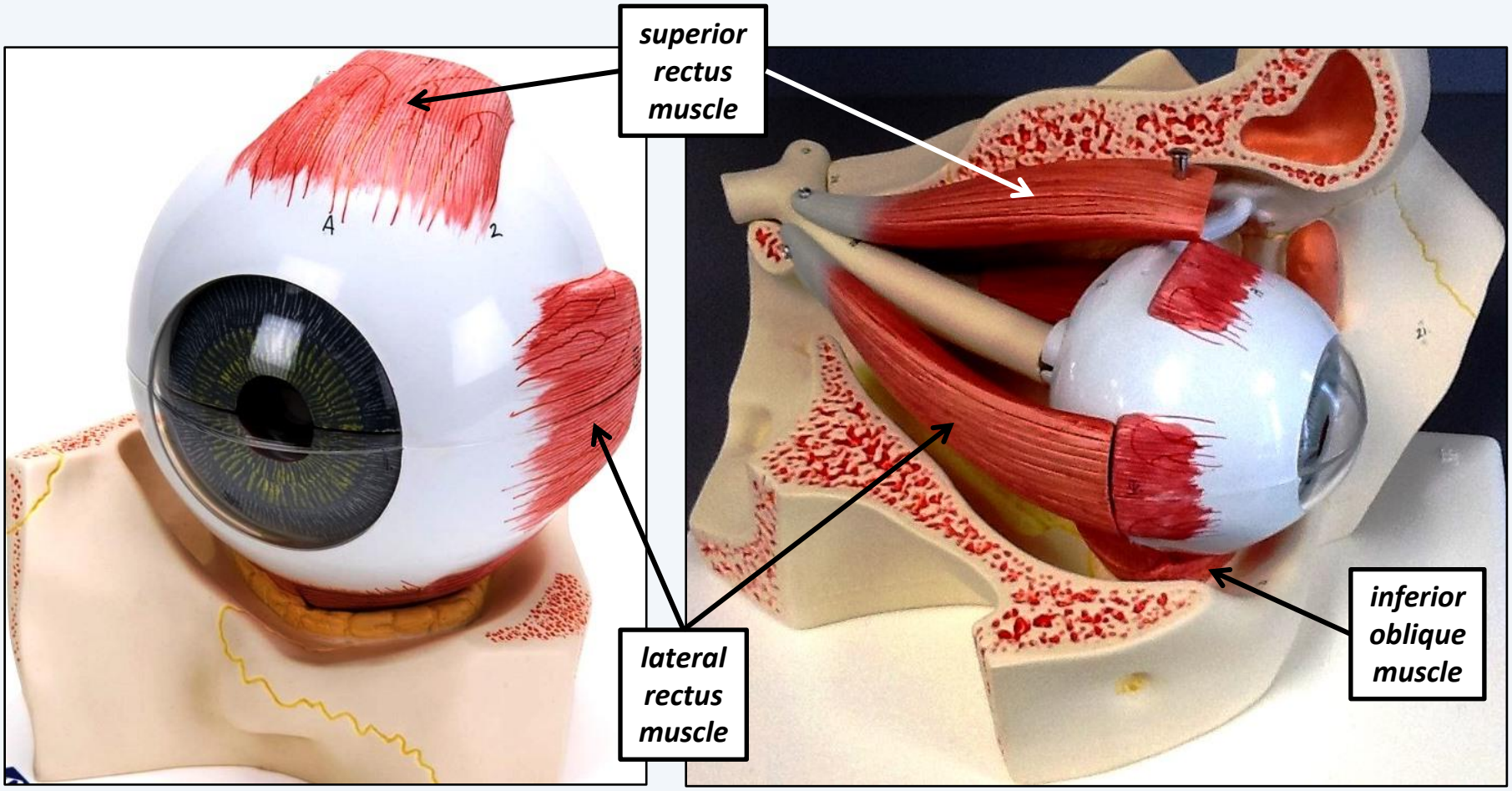
  Functions to move eye inferiorly & laterally

- ***Inferior oblique muscle***

  Functions to move eye superiorly & laterally

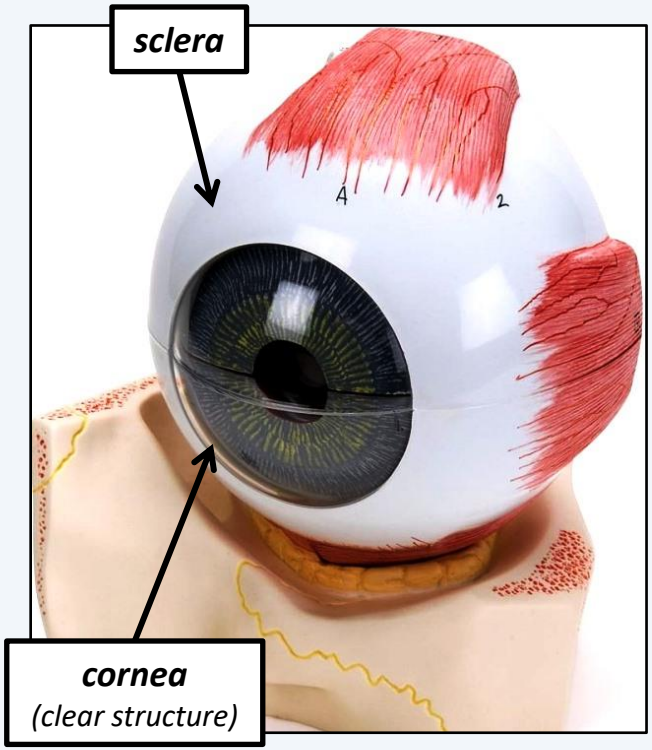
Extrinsic Eye Muscles

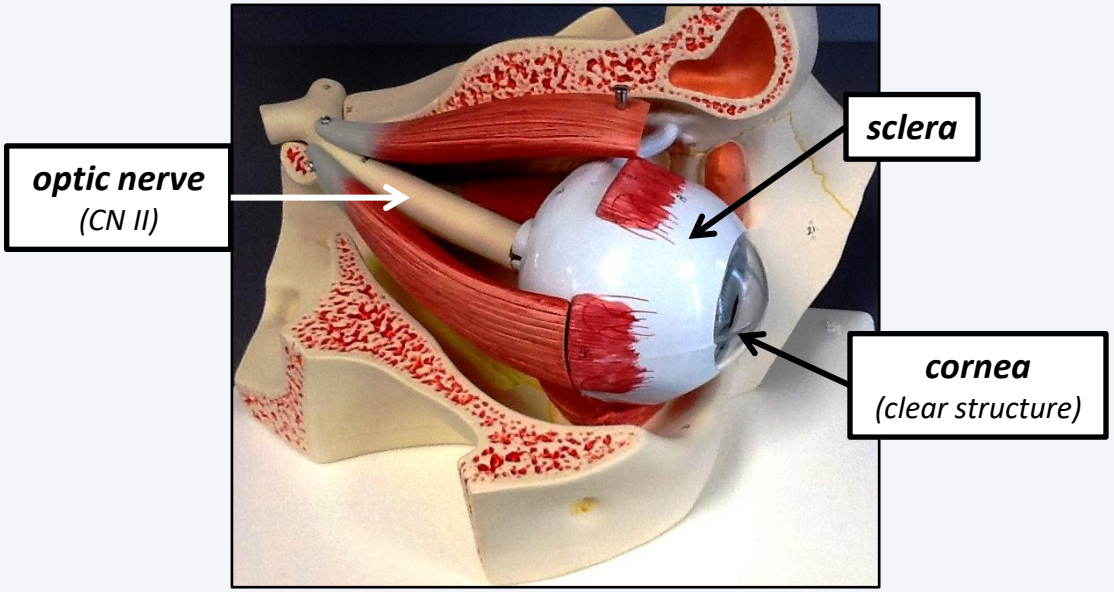
Anterior view of large left eye model (left) & lateral view of small right eye model (right) shown
Eyelids removed from models



External Anatomy of Eye

Anterior view of large left eye model (left) & lateral view of small right eye model (right) shown
Eyelids removed from models





- ***Fibrous tunic of eye***
  - ***Cornea***

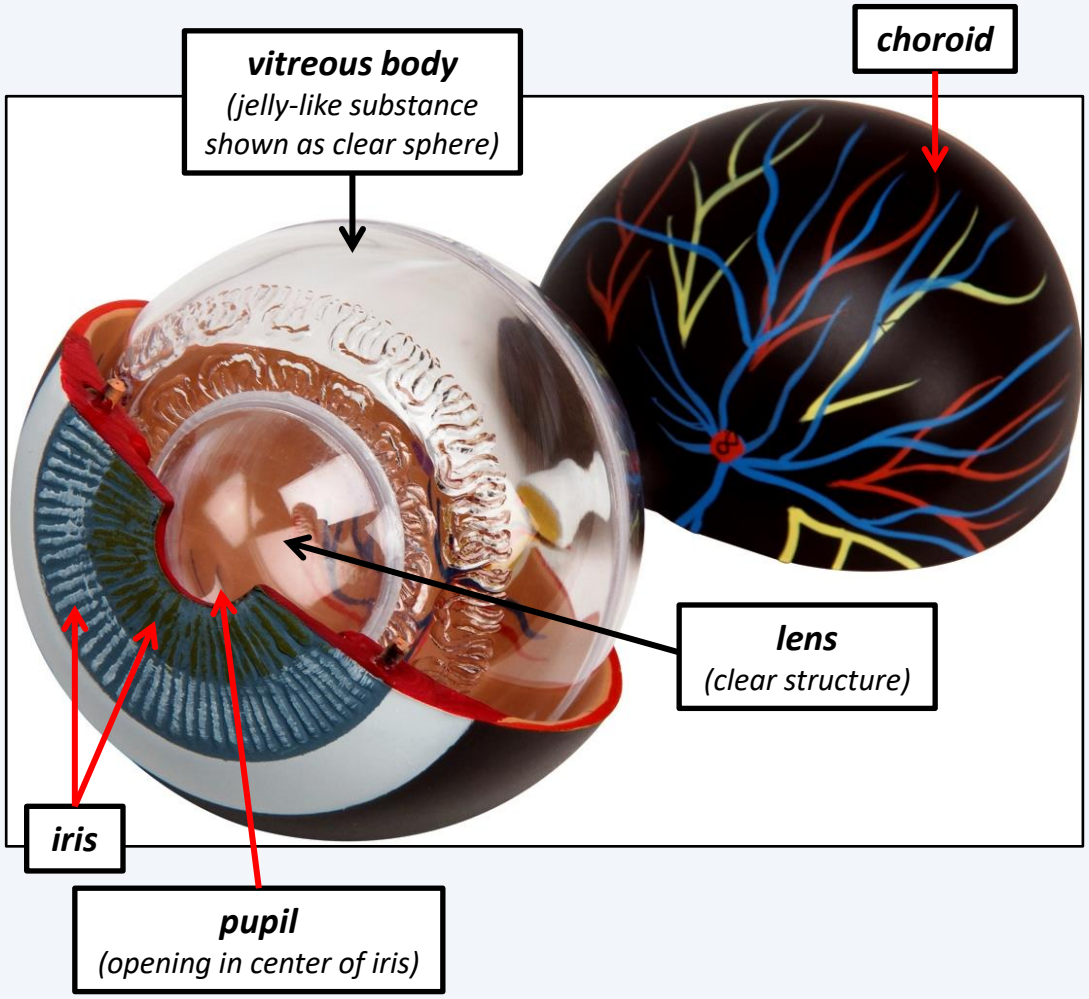
    Functions to refract/bend light rays to focus them onto the central fovea (fovea centralis) of the retina
  - ***Sclera***

    Functions to protect the internal eye structures & provides shape for the eyeball
- ***Optic nerve (CN II)***

  Functions as a sensory nerve

Internal Anatomy of Eye

Large left eye model shown



- ***Vascular tunic of eye***
  - ***Choroid***

    Functions to absorb stray light rays to prevent light from scattering in the eye
  - ***Iris***

    Functions to contract/relax to regulate pupillary size & the amount of light entering the pupil
  - ***Pupil***

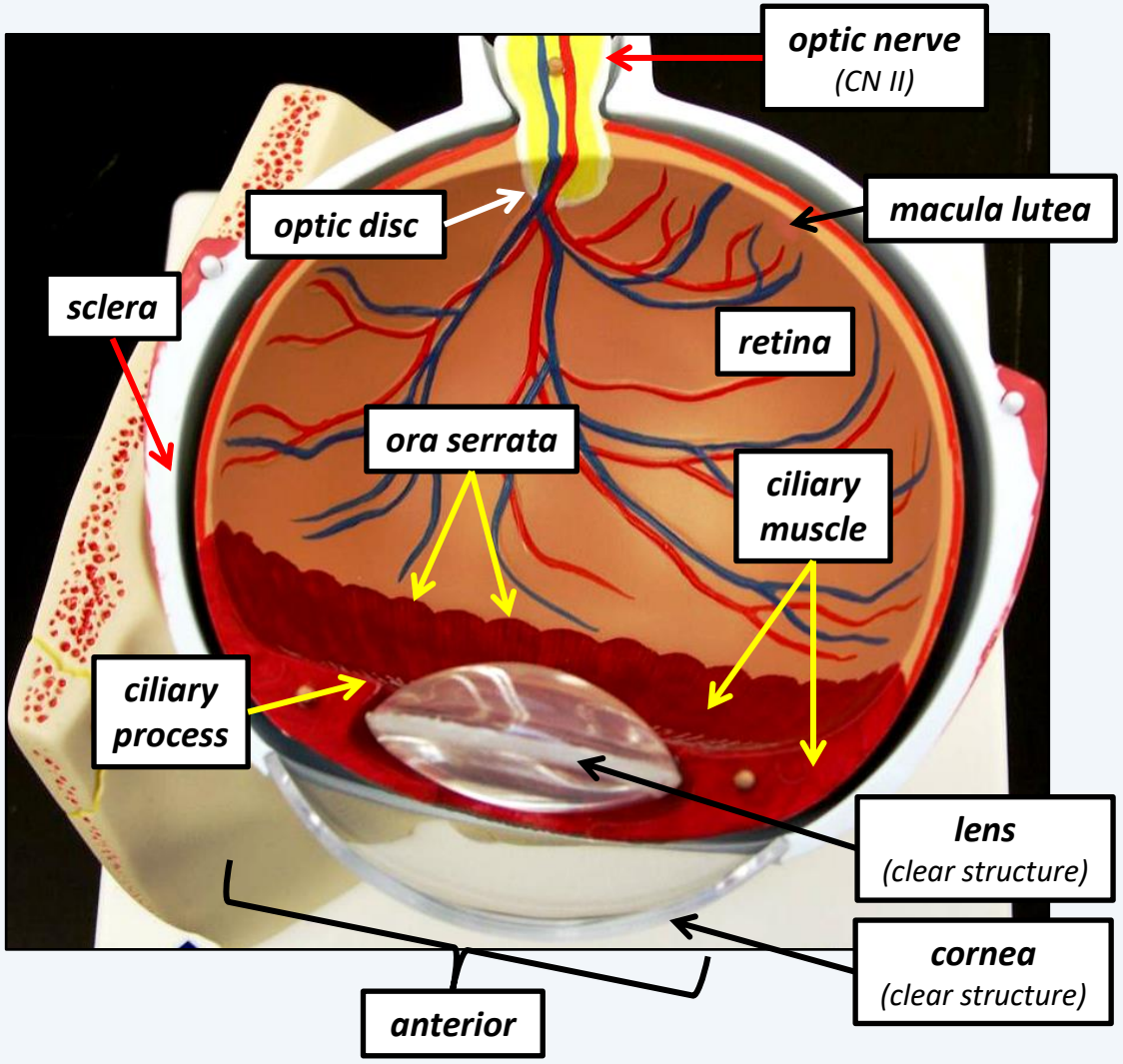
    Functions to allow light to enter the eye
- ***Lens***

  Functions to refract/bend light rays to focus them onto the central fovea (fovea centralis) of the retina
- ***Vitreous body***

  Functions to push the retina against the choroid to provide a smooth retinal surface

Internal Anatomy of Eye

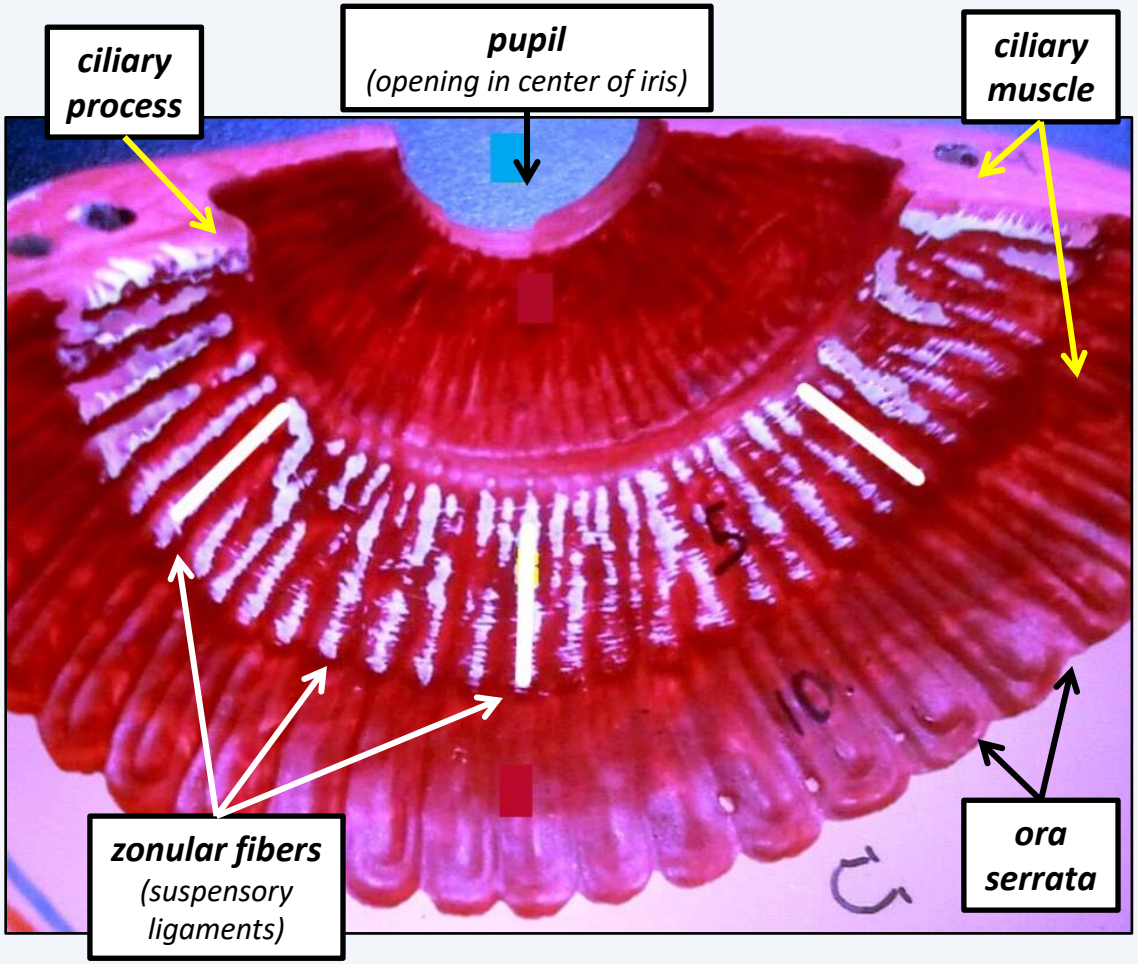
Superior view of cross-section of large left eye model shown
Vitreous body removed from model



- ***Fibrous tunic of eye***
  - ***Cornea***
  - ***Sclera***
- ***Vascular tunic of eye***
  - ***Ciliary body***
    - ***Ciliary muscle***
    - ***Ciliary process***
    - ***Ora serrata***
- ***Lens***
- ***Retina***
  - ***Retinal layers***
    (not shown on model)
    - ***Pigmented layer***
    - ***Neural layer***
  - ***Macula lutea***
  - ***Optic disc***
- ***Optic nerve (CN II)***

Internal Anatomy of Eye

Posterior view of anterior portion of large left eye model shown
Lens removed from model



Vascular tunic of eye

- ***Ciliary body***
  - ***Ciliary muscle***

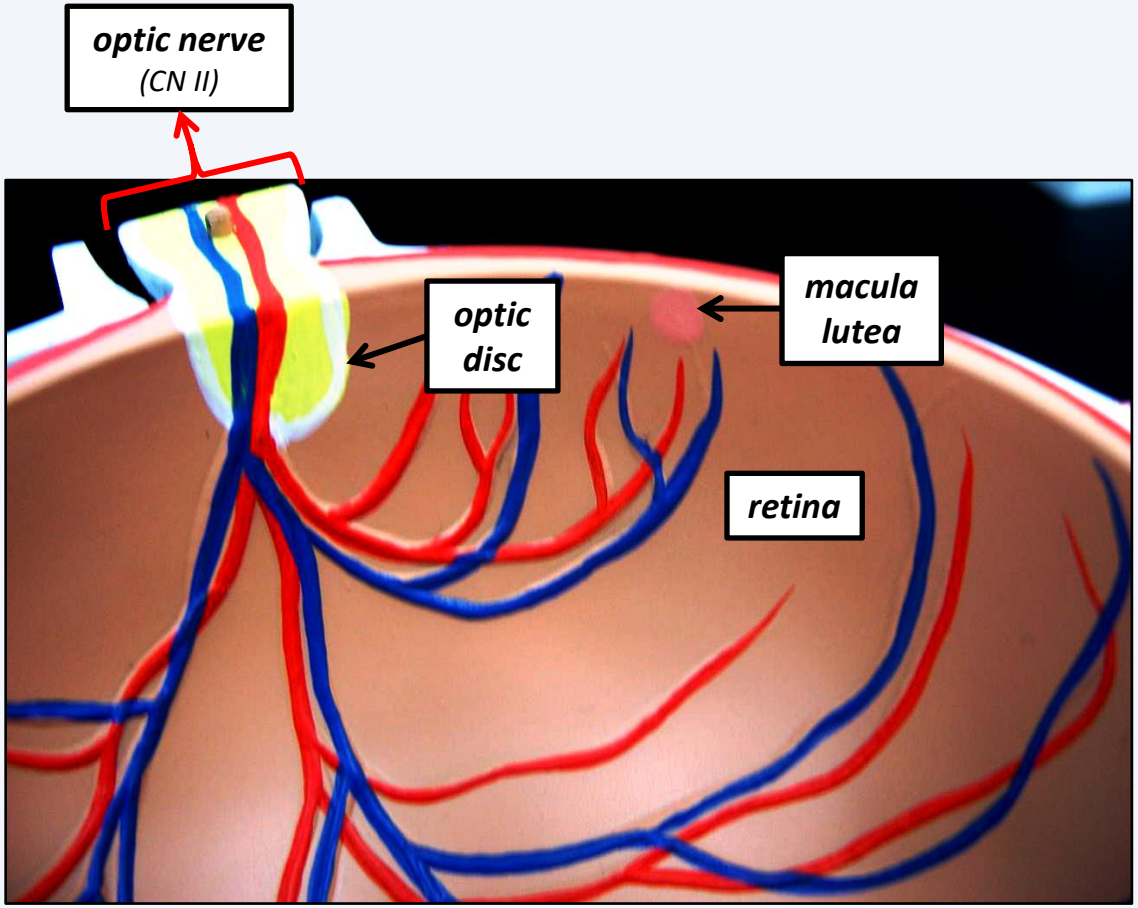
    Functions to contract to tighten zonular fibers & relaxes to loosen zonular fibers
  - ***Ciliary process***

    Functions to secrete aqueous humor
  - ***Zonular fibers***
    (suspensory ligaments)

    Function to attach the lens to the ciliary muscle to hold the lens in place
  - ***Ora serrata***

Internal Anatomy of Eye

Superior view of posterior portion of large left eye model shown
Vitreous body removed from model



Retina

Functions to detect & transduce light energy into nerve impulses

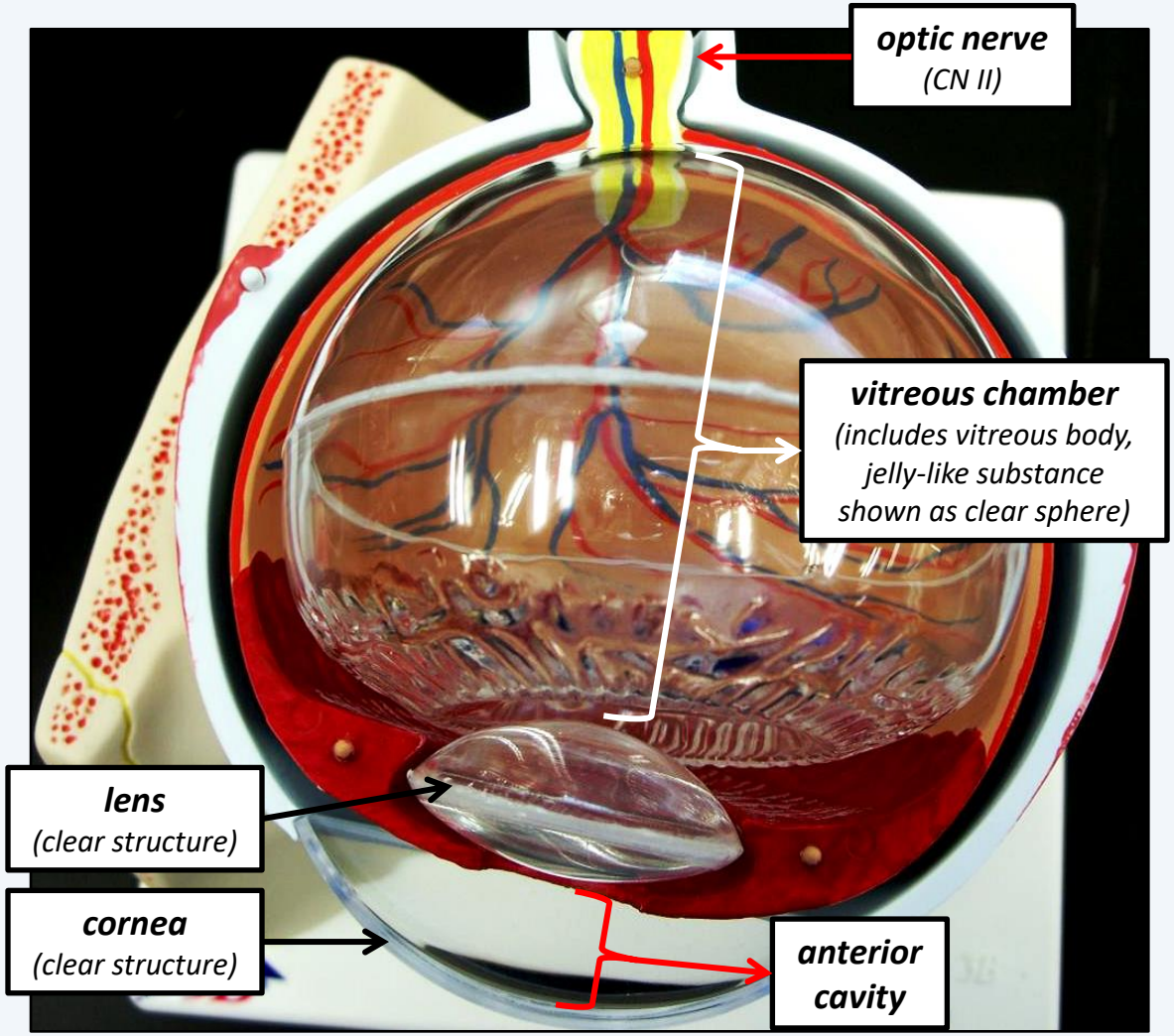
- ***Retinal layers*** *(not shown on model)*
  - ***Pigmented layer***
    - *Composed of melanocytes*
    - *Functions to absorb stray light rays that enter the eye; removes cellular debris; stores vitamin A*
  - ***Neural layer***
    - *Composed of photoreceptors (i.e. rods & cones)*
    - *Functions to detect & transduce light energy into nerve impulses*
- ***Macula lutea***

  Functions to provide the highest visual acuity when light rays focus on the central fovea (fovea centralis) of this structure
- ***Optic disc***

  Area of retina where optic nerve exits eye & lacks photoreceptors
- ***Optic nerve (CN II)***

Internal Anatomy of Eye

Superior view of large left eye model shown



- ***Cornea***
- ***Lens***
- ***Cavities of eye***
  - ***Anterior cavity***

    Contains aqueous humor
  - ***Vitreous chamber***

    Contains vitreous body
    - ***Vitreous body***
- ***Optic nerve (CN II)***