THE EYE

OCULAR MUSCLES:
• Six external (extrinsic)
• All originate from bony orbit
• All insert upon the sclera

**SUPERIOR RECTUS**
turns eye upwards and inwards

**MEDIAL (INTERNAL) RECTUS**
turns eye inwards (towards nose)

**INFERIOR RECTUS**
turns eye downwards and inwards

**LATERAL (EXTERNAL) RECTUS**
(Cut here), turns eye outwards

**SUPERIOR OBLIQUE**
turns eye downwards and outwards

**INFERIOR OBLIQUE**
turns eye upwards and outwards

Note: Acting together, the extrinsic muscles can accomplish the rotatory movements of the eye.
PROTECTION:

Hidden (posterior, 4/5ths) of eyeball encased by the bony socket (orbital cavity). Thick areolar and adipose tissue cushion eyeball from hard bone surface.

Exposed (anterior, 1/5th) of eyeball is protected by:
Eyelids (palpebrae): fringed with eyelashes (blink reflex). are also associated with the glands of Zeiss (sebaceous) and Meibomian (tarsal) glands (lipid); secretions prevent eyelids from adhering to each other.

See lacrimal apparatus.
Lacrimal glands: (superior and lateral to each eye), tear - secreting; open at medial region of eye. contain lysozyme (anti - bacterial);
Lacrimal ducts drain tears to Lacrimal sac and finally to the Naso - lacrimal duct (drains tears to back of nose).

Conjunctiva: a delicate membrane lining eyelids.
OPTIC NERVE
CENTRAL VEIN
CONJUNCTIVA
POST. CHAMBER (after iris to lens)
PUPIL
CORNEA
IRIS
LENS
SUSPENSORY LIGAMENT
CENTRAL ARTERY
OPTIC DISC
FOVEA CENTRALIS
RETINA
SCLERA
CHOROID
INFERIOR RECTUS MUSCLE
SUPERIOR RECTUS MUSCLE
CONJUNCTIVA
CILIARY BODY
POST. CHAMBER (after iris to lens)
CORNEA
PUPIL
LENS
IRIS
SUSPENSORY LIGAMENT
CENTRAL ARTERY
OPTIC DISC
FOVEA CENTRALIS
RETINA
SCLERA
CHOROID
INFERIOR RECTUS MUSCLE
SUPERIOR RECTUS MUSCLE
ANTERIOR CAVITY: (aqueous humor)
Anterior Chamber (1), cornea to iris
Posterior Chamber (2), iris to lens (smallest)

POSTERIOR CAVITY: (vitreous humor)
(3), lens to rear of eyeball
THREE MAJOR LAYERS IN THE EYE (tunic = coat)

• **FIBROUS tunic** (Outer layer)
  *Cornea*: transparent, avascular, light transmission
  *Sclera*: Tough fibrous tissue (white of eye)

• **VASCULAR tunic** (Mid-layer, uveal, pigmented)
  Contains many veins and arteries
  *Choroid*: posterior 5/6 of vascular coat, bound loosely to sclera, high melanocyte density (brownish color), absorbs excess light.
  *Ciliary body*: production of aqueous humor
  *Suspensory Ligaments*: attached to lens, relaxation allows lens curvature alterations for "accommodation", necessary for near vision.
  *Iris*: colored muscular ring surrounding pupil, controls size of pupil opening

• **NEURAL tunic** (Inner layer, Nervous Coat)
  *Retina*: Highly specialized to respond to stimulation by light. Continuous with the optic nerve. Ends anteriorly just behind the ciliary body.
  Major protein = rhodopsin
  Converts light energy into nerve impulses (via optic nerve) to visual centers in the brain (occipital region).
  Retina contains **photoreceptor** cells: rods and cones.
  *Rods*: sensitive to dim light (no color discrimination).
  *Cones*: stimulated by bright, colored light.

  *Optic Disc*: "Blind spot"; nerve fibres from all parts of the retina converge to leave eyeball as optic nerve. No rods or cones here, also- blood vessels in/out.

  *Fovea centralis* (center of macula lutea or "yellow spot"): Area of acute vision, contains cones only.