# Orientation History taking and Examination

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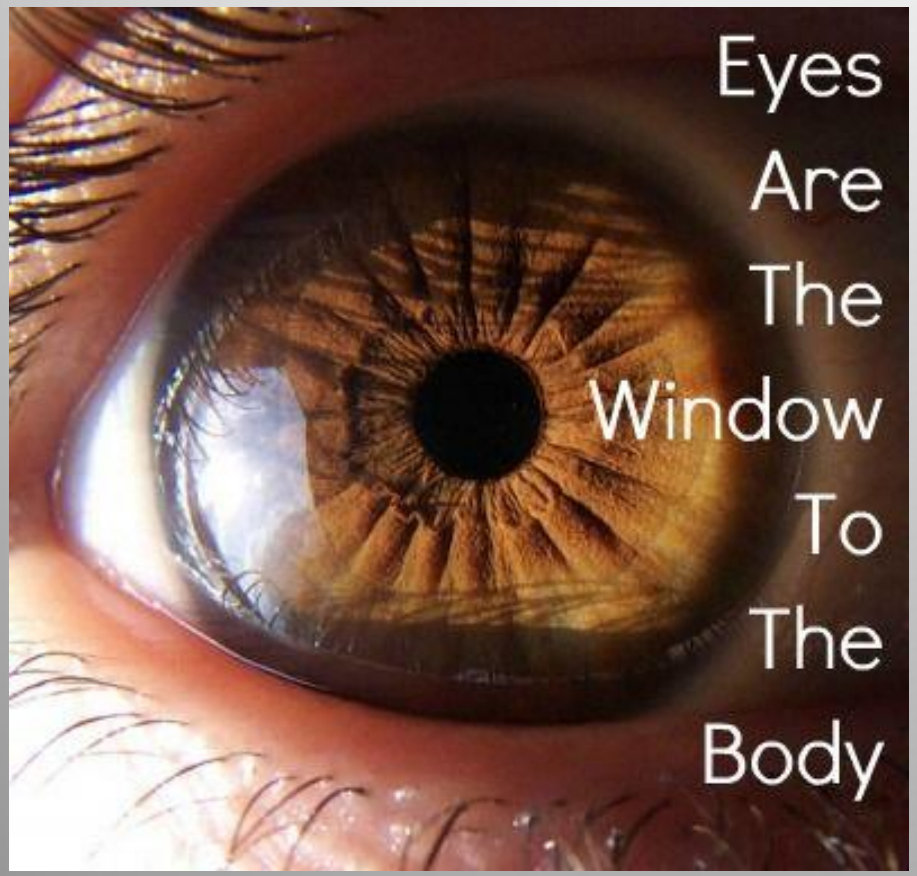
# Orientation

## OPH 432 Course

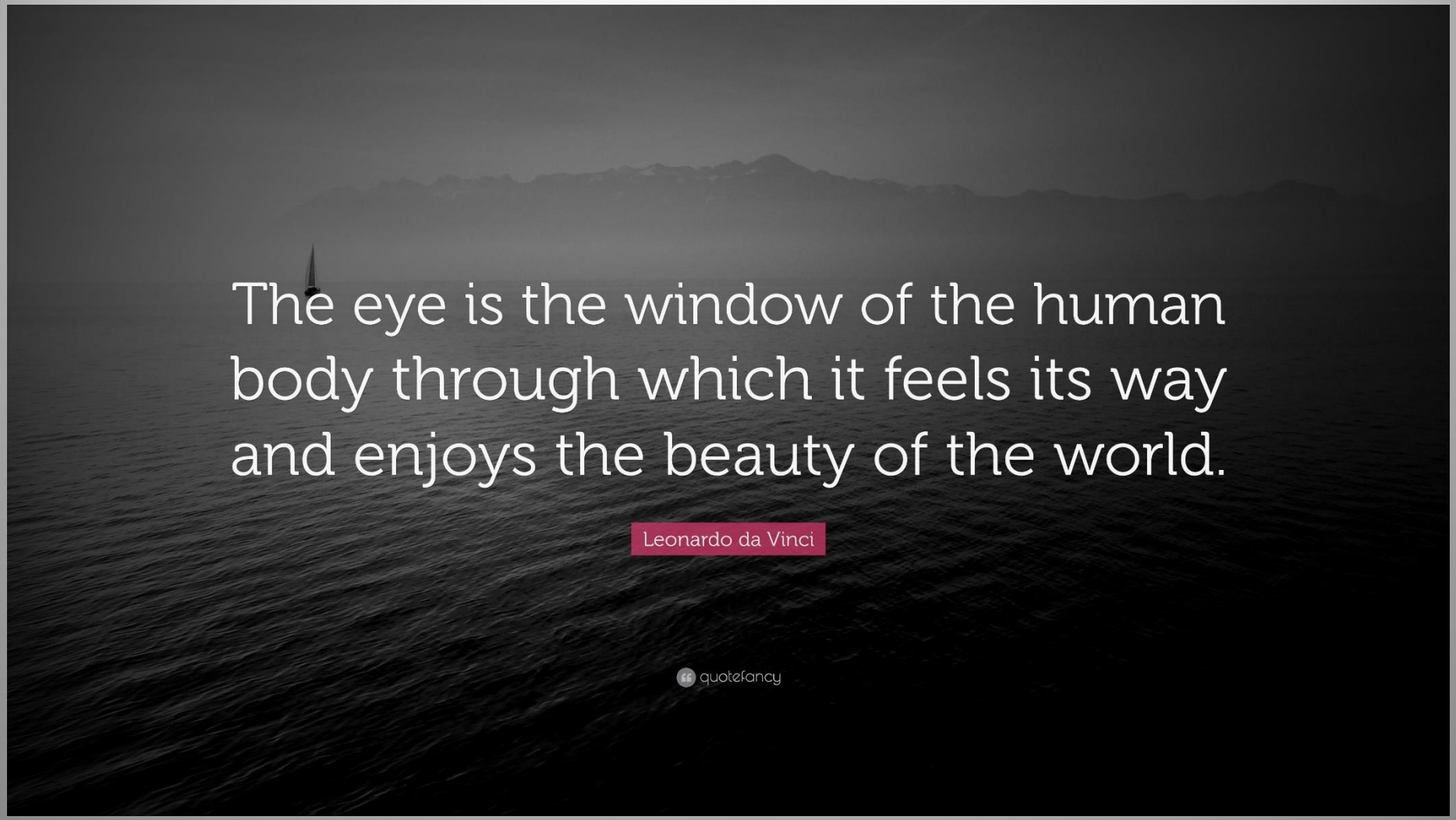
## Ophthalmologist

## Optometrist




Why should you be interested in the eye?

# Internet is a window to the world


The eye is the window of the human body through which it feels its way and enjoys the beauty of the world.
Leonardo da Vinci
quotefancy

# Objectives of this course

- To know the basic ophthalmic anatomy and physiology.
- To know how to assess and manage common ophthalmic diseases.

# Objectives of this course

- To know how to triage and treat common ophthalmic emergencies.
- How to use simple ophthalmic diagnostic instruments.
- To acquire basic knowledge of some common ophthalmic operations.

# Components of the course

- Lectures
- Clinics
- Clinical sessions
- ER

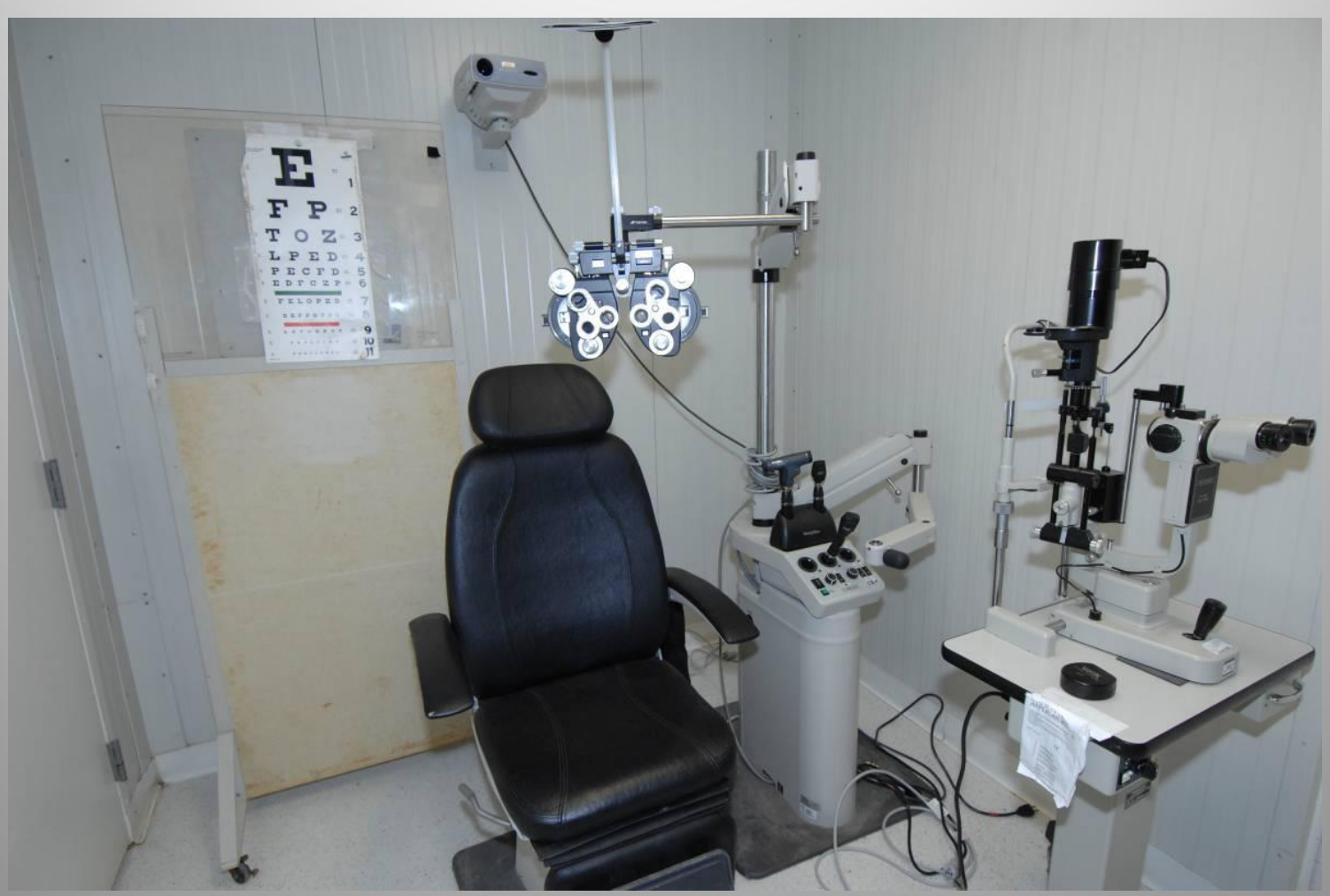
# Lectures

1. History taking and ophthalmic exam
2. Basic anatomy and physiology of the Eye
3. Lid, Lacrimal, and Orbit Disorders
4. Ocular emergencies and red eye
5. Strabismus, Amblyopia and Leukocoria
6. Acute Visual Loss

# Lectures

7. Chronic Visual Loss
8. Refractive Errors
9. Ocular manifestations of systemic diseases
10. Neuro-ophthalmology
11. Ocular Pharmacology and Toxicology

# Clinic



# Clinic

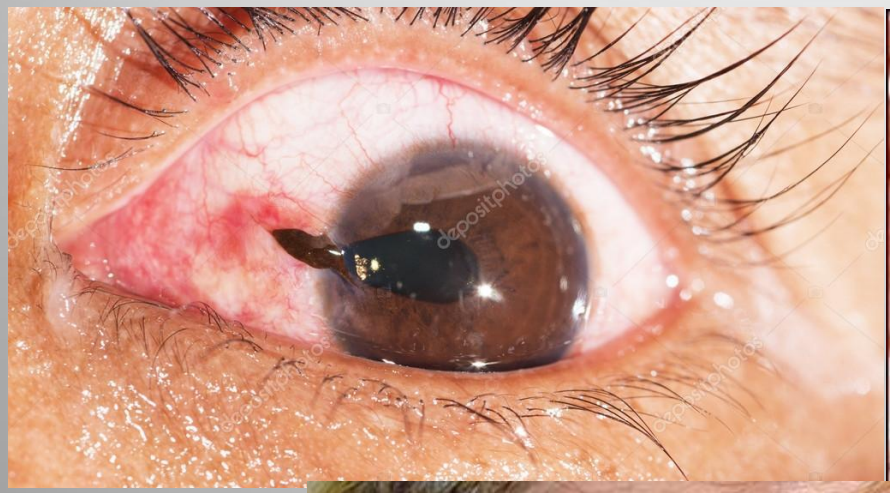
# Clinical skill sessions

1. Ocular motility, alignment and external Ocular Examination

2. Visual acuity and Ophthalmoscopy

3. Visual field, Tonometry and Pupil Examination

# Emergency room



# Marks distribution

- 30 MCQs
- 40 short answer question
- 20 OSCE

- 10 attendance in clinical sessions, clinics & ER

# Recommended textbooks

**1. Required Text(s)**

**a. Lecture notes in Ophthalmology** (latest edition)

By: Bruce James (published by Blackwell Science)

**b. Basic Ophthalmology** (latest edition)

By: Cynthia A. Bradford

(published by American Academy of Ophthalmology)

**c. Practical Ophthalmology: A manual for Beginning Residents** (latest edition)

By: Fred M. Wilson (published by AAO)

## 2. References

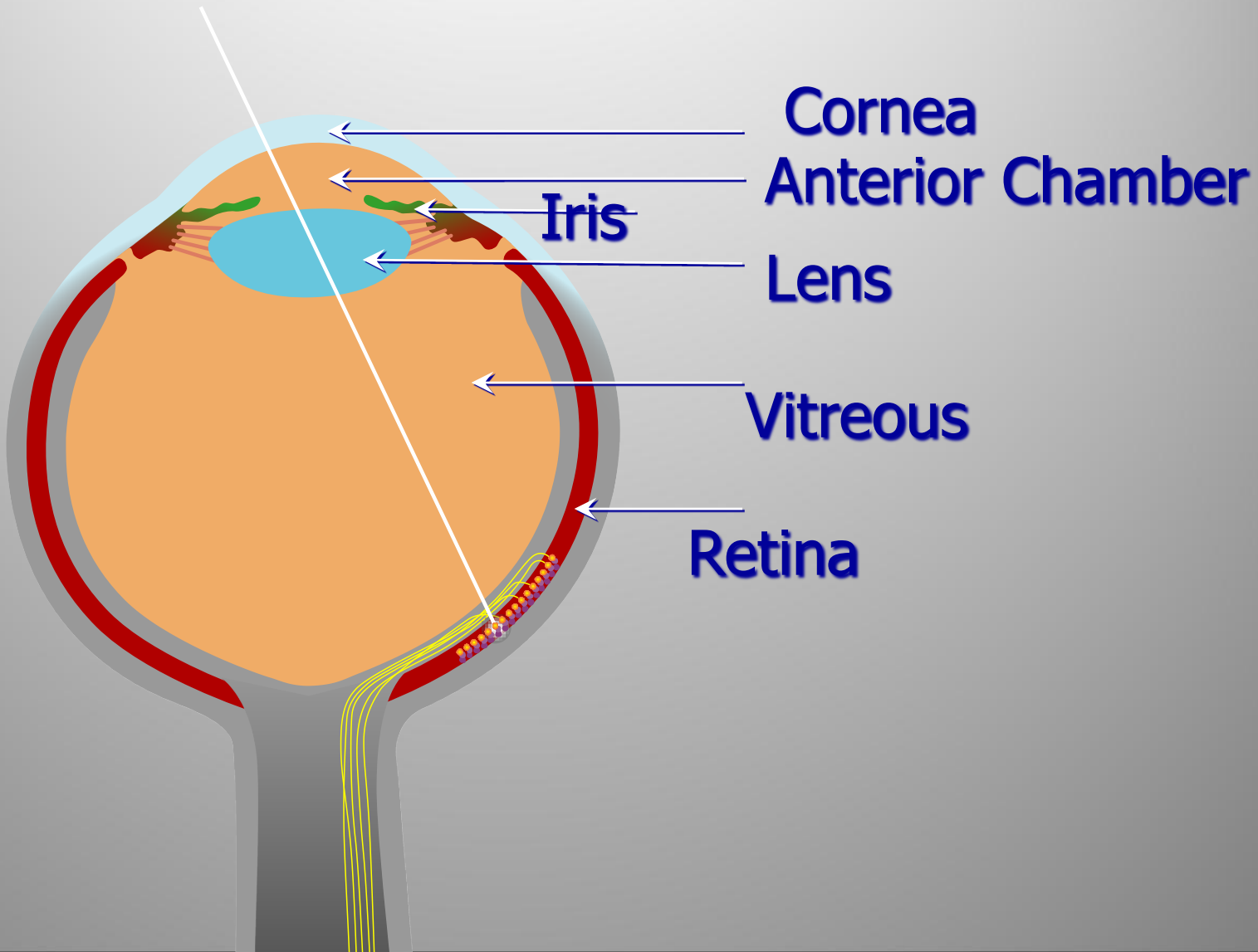

- Vaughan and Asbury's general Ophthalmology
  By: Paul Riordan-Eva (published by LANGE)
- Clinical Ophthalmology: A Systematic Approach
  By : Jack T. Kanski (published by Butterworth Heinemann)

## c. Electronic Materials, Web Sites

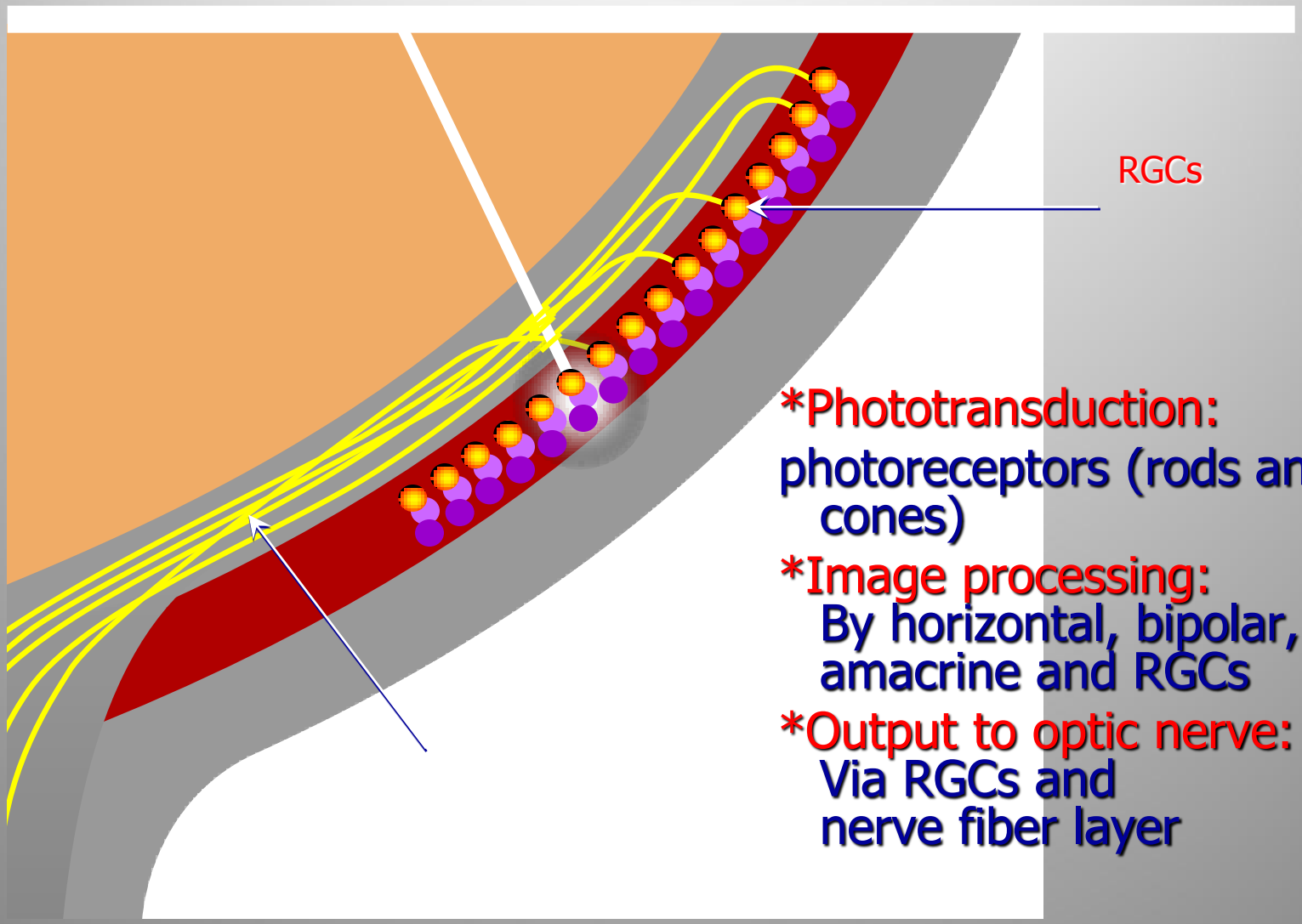
1. University and KKUH/KAUH Library
2. Audiovisual Unit of the Ophthalmology Department
3. PubMed
4. Medscape
5. The digital journal of ophthalmology (www.djo.harvard.edu)
6. up to date.com
7. E medicine

# The EYE

# The Visual Pathway



# The Visual Pathway

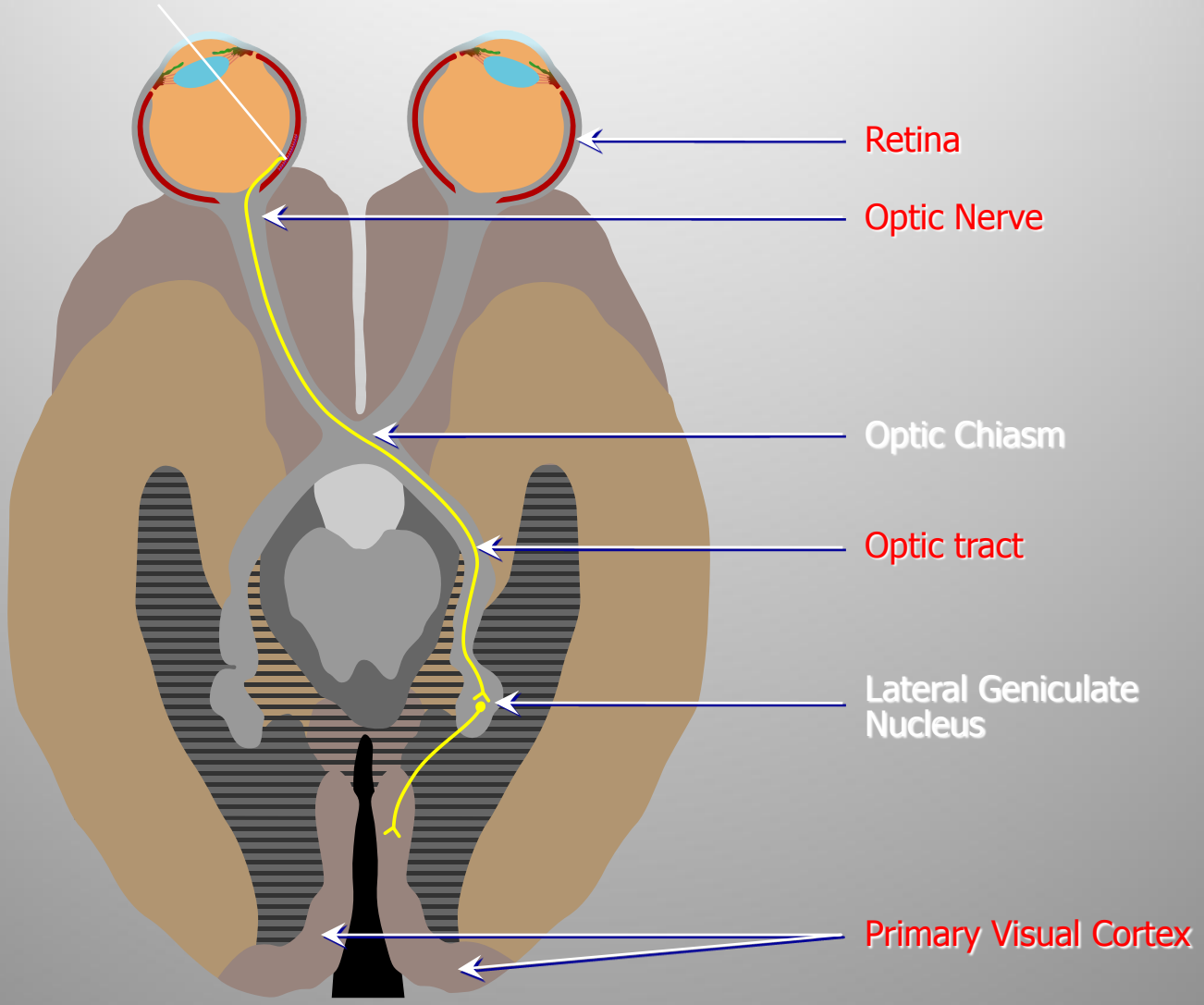



*Phototransduction:
photoreceptors (rods and cones)

*Image processing:
By horizontal, bipolar, amacrine and RGCs

*Output to optic nerve:
Via RGCs and nerve fiber layer

# The Visual Pathway



# “The eye is the window to the body”

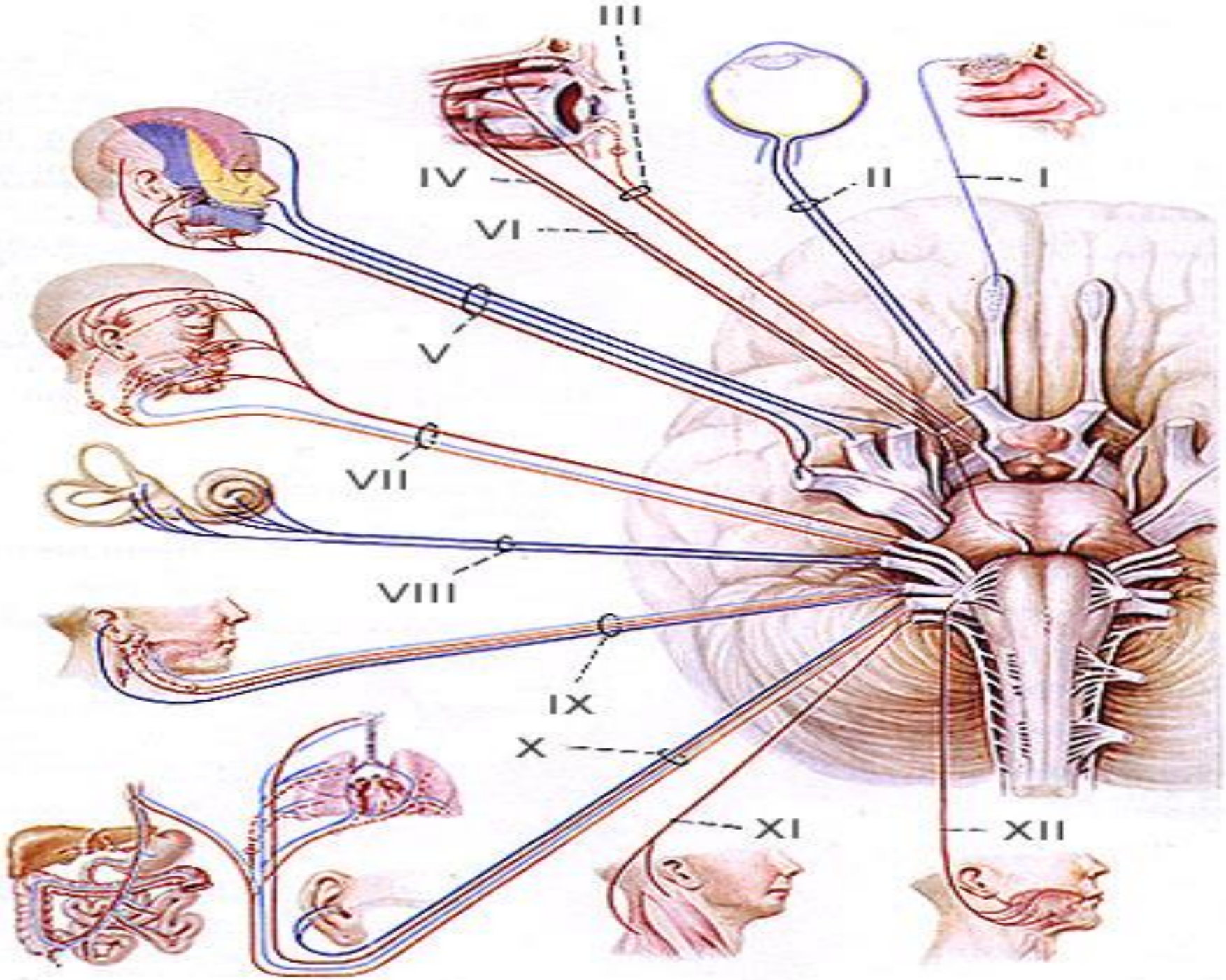
- The eye is so intimately connected with the rest of the body that it reveals enormous amount of general information.

- Eye is the only part of the body where blood vessels and central nervous system tissues can be viewed directly.

# Examples

# Neurological connections

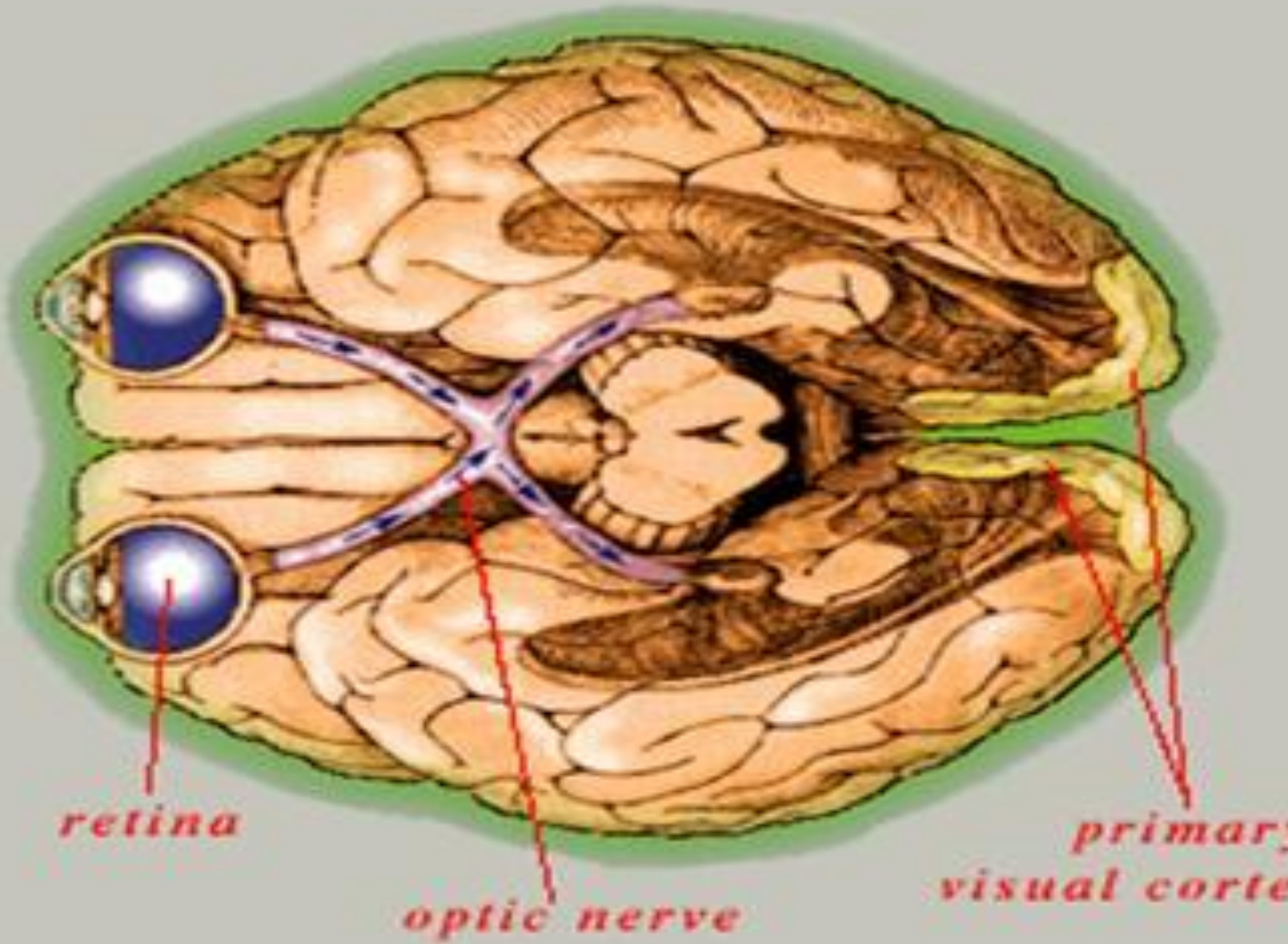
- The 12 cranial nerves provide us with a large amount of information about the brain.
  - Of these , the eye examination evaluates CN II, III, IV, V, VI, VII, VIII.
- In addition, they provide information about the autonomic pathways. *(sympathetic /parasympathetic)*


III
IV
II
I
VI
V
VII
VIII
IX
X
XI
XII

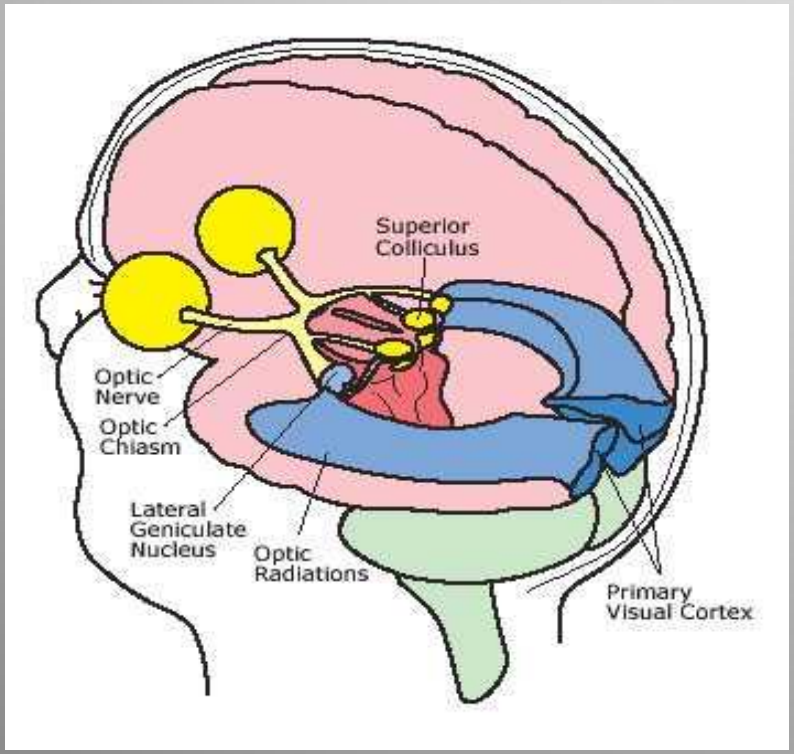
- **The retina and optic nerve**
  - Are physical extensions of the brain.

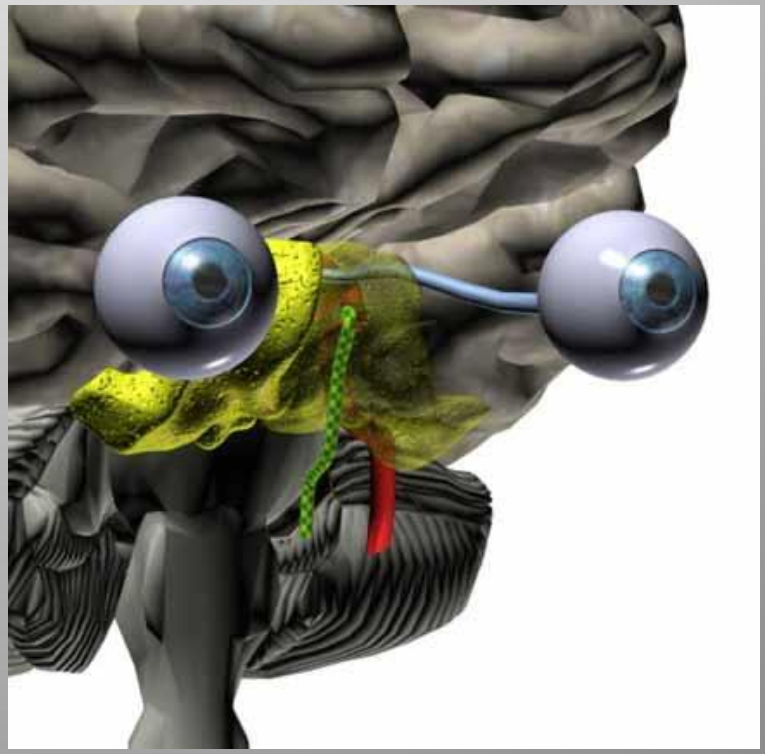
- **The visual pathways:**
  - Extends from front to back across the brain can be studied easily and safely using perimetry.

  - Perimetry can differentiates accurately between lesions of the temporal, parietal, and occipital lobes.

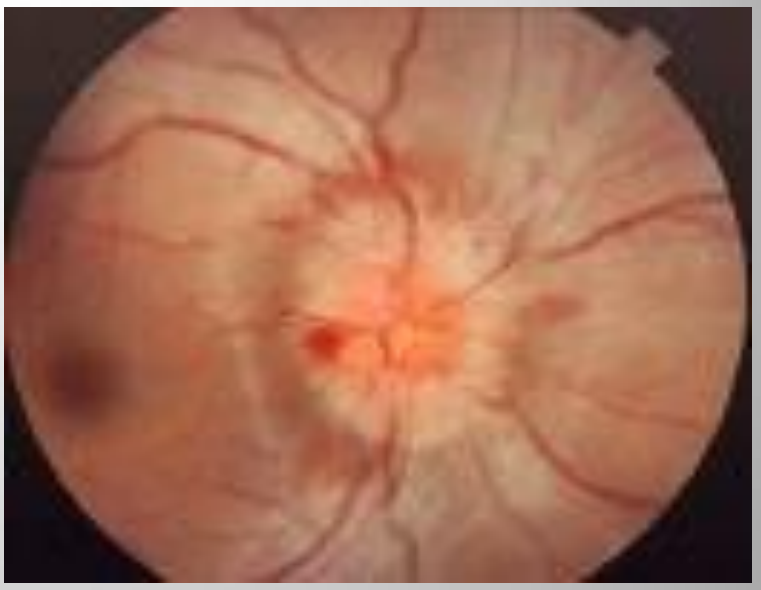

retina
optic nerve
primary
visual cortex

- **In addition,**
  - the ON has important clinical relationships to the pituitary gland, the middle ventricles, the venous sinuses, the meningeal and bony structures of base of the skull.



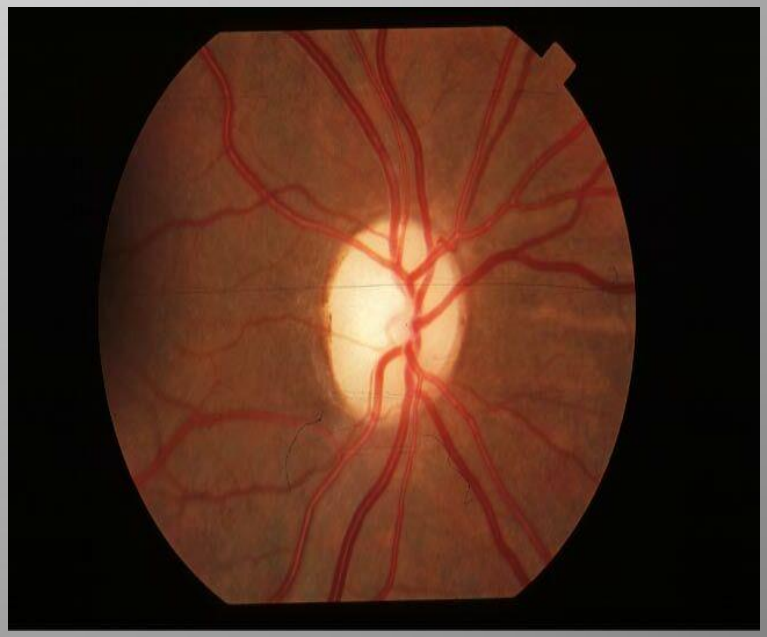



ON has the diagnostically useful capability of swelling with ↑ ICP (*papilledema*).



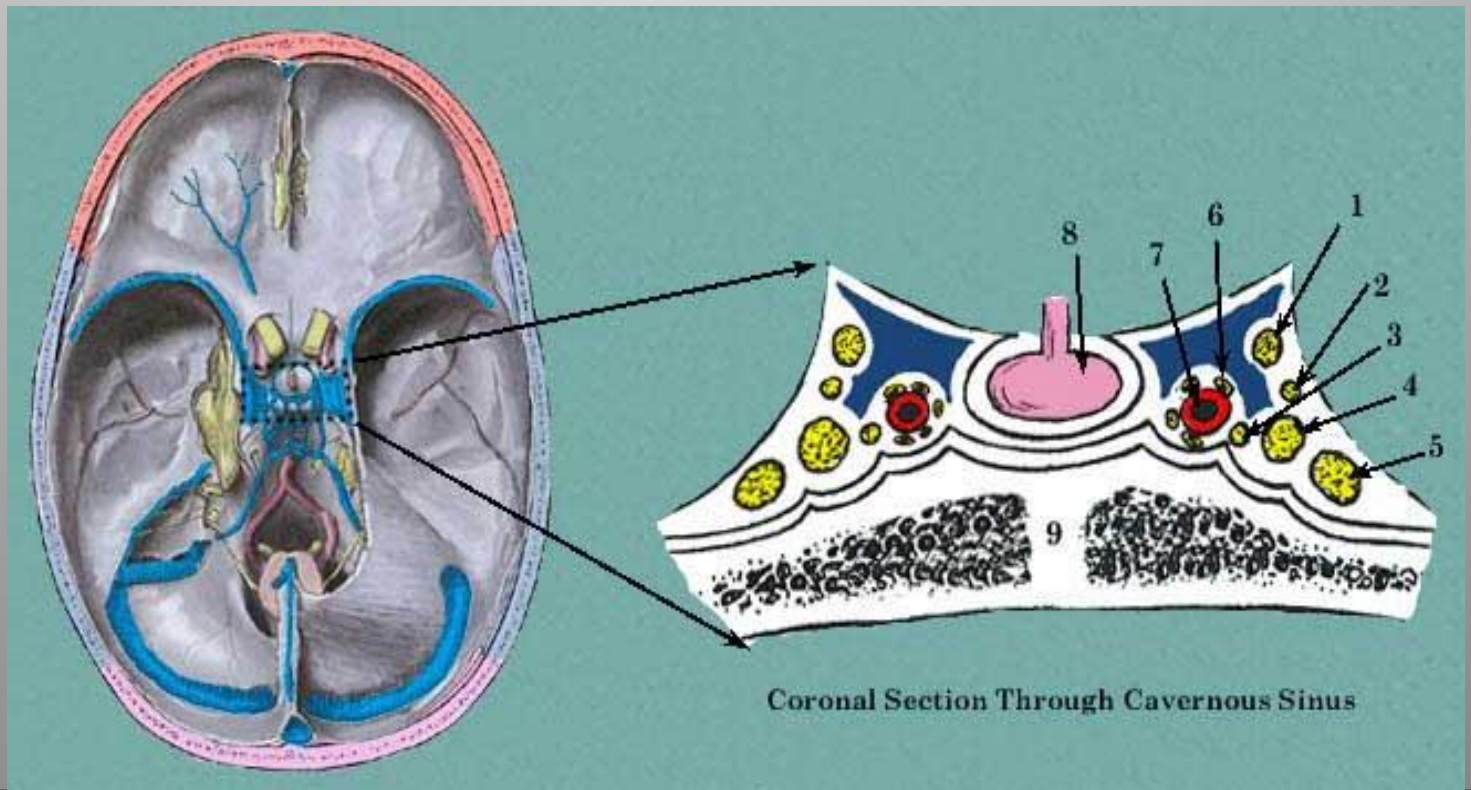
**OR**

visibly pale (*optic atrophy*) when its nerve fibers damaged at any point from Retina → LGB.



# The study of CN III, IV, V, VI a clinician can evaluate:

1. The brain stem
2. Cavernous sinus
3. Orbital apex



- Unilateral dilated pupil after head injury can occur due to pressure on pupil constrictor fibers of CN III.

- CN VI involved in mastoid infection (petrous ridge)

- Parotid gland, Inner ear disease → CN VII.

- Nystagmus → CN VIII

# Vascular connections

- **Venous flow disorders:**

  cavernous sinus thrombosis

  OR

  carotid cavernous fistula

  **(orbital congestion)**

- **Arterial emboli**

  can reach the retina from carotid artery, heart valves, subacute endocarditis.

- **Hypertension**

- **Systemic vasculitis:**

  PAN, temporal arteritis & SLE

- Hematological disorders of all types can manifest in the fundus.

- Metabolic disorders can affects the eye:

  **DM** :DR, cataract, refractive error, ophthalmoplegia.

  **Hyperthyroidism** : Graves disease

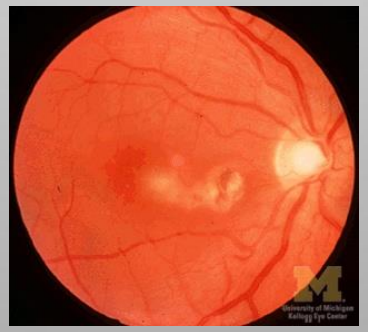
  **Wilson's disease**. KF ring

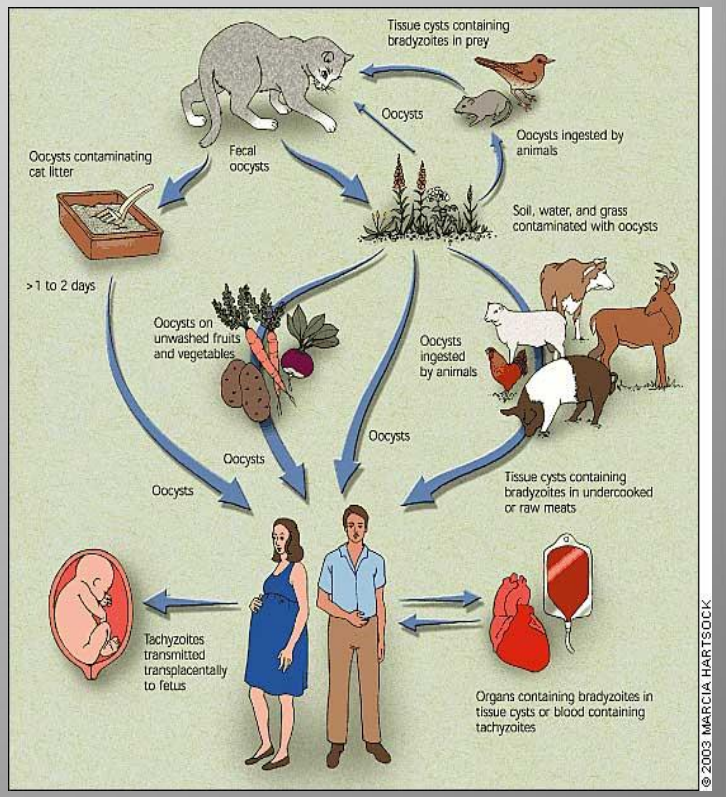
## ❖Thyroid eye disease:

Exophthalmos, Lid retraction.

## ❖Infections:

(Syphilis, Toxoplasmosis & Rubella)





- Mucocutaneous disorders:
  SJS, pemphigus

- Elastic tissue disorders:

  (Pseudoxanthoma elasticum)

- Allergy disorders:
  Vernal keratoconjuctivitis

- Chromosomal abnormalities:

  Trisomy: 13,15, 18 & 21.

- The eye is a delicate indicator of poisoning:

  -Morphine addict → miotic pupil

  -Lead poisoning, vitamin A intoxication → papilledema

- 90% of our information reaches our brain via sight.

- Unfortunately, of all the parts of the body, the eye is the most vulnerable to minor injury.

# What are the components of a comprehensive ophthalmic evaluation?

- Obtain an ocular and systemic history.
- Identify risk factors for ocular and systemic disease.
- look for symptoms and signs of ocular or systemic disease.
- Determine the optical and health status of the eye and visual system.

- reach a provisional diagnosis

- Initiate an appropriate response:
  e.g. further diagnostic tests, treatment, or referral.


HISTORY

History by skilled person can arrive at the proper diagnosis in 90% of patients

- It gives vital guidance for:
  - (a) physical examination
  - (b) laboratory work
  - (c) Therapy

- Failure to take history can lead to missing vision or life-threatening conditions.

# **Chief complaint:** *"The patient's own words"*

"she cannot see with the RE"

You should not come to conclusion that her problem is nearsightedness and write down "Myopia of RE".

- The patient needs will not be satisfied until he/she has received an acceptable explanation of the meaning of the chief complaint and its proper management.

# History of the Present Illness:

- Detailed description of the chief complaint to understand the symptoms and course of the disorder.

- Listen and question and then write down in orderly sequence that make sense to you.

* The time sequence

  when, How fast, what order did events occur?

* Frequency, intermittency
* location, Laterality
* Severity
* Associated symptoms
* Documentation (old records, photo)

  e.g ptosis, proptosis, VII N palsy.

- Gradual painless decrease vision both eyes for 1y.
- Sudden painless decrease vision re for 10 min.

# "cannot see with RE"!!

- ? Only distance vision blurred.
- ? Blind spot is present in the center of VF
- ? Right side of VF of the RE lost
- ? Right VF of both eyes lost
- ? A diffuse haze obscures the entire field of RE

- *Each of these has different diagnostic implication*
- *Most pt. has difficulty providing precise and concise description*

# Disturbances of vision:

- Blurred or decreased central vision
- Decreased peripheral vision. (glaucoma)
- Altered image size.
  (micropsia, macropsia, metamorphopsia).
- Diplopia (monocular, binocular)
- Floaters
- Photopsia (flash of light)

- Color vision abnormalities.
- Dark adaptation problems.
- Blindness

  (ocular, cortical).
- Oscillopsia

  (shaking of images).

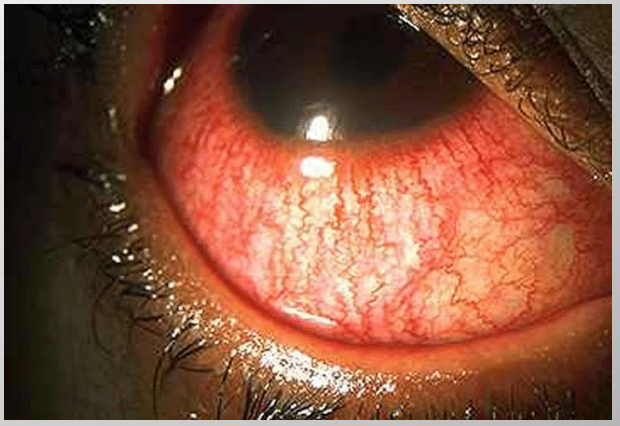
# Ocular pain or discomfort:

- Foreign body sensation
- Ciliary pain
  - (aching, severe pain in or around the eye, often radiating to the ipsilateral forehead, molar area)
- Photophobia
- Headache
- Burning
- Dryness
- Itching: patient rub the eye vigorously (allergy)
- Asthenopia (eye strain)

# Abnormal ocular secretions:

- Lacrimation, epiphora
- Dryness
- Discharge
  (purulent, mucopurulent, mucoid, watery)

- Redness, opacities, masses



- Anisocoria

# Family history:

- Many eye conditions are inherited

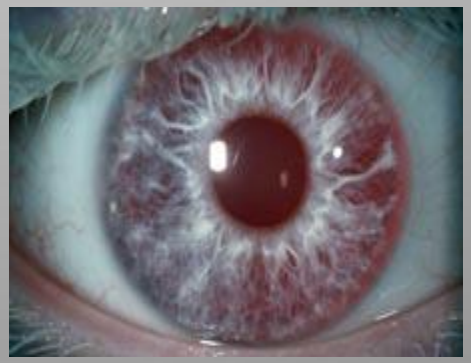
  Refractive error, glaucoma, strabismus, retinoblastoma, neoplasia & vascular disorders

- Familial systemic disease can be helpful in ophthalmic evaluation and diagnosis

  Atopy, thyroid diseases, DM, some malignancies.

- Ask about any eye problem in the family background?

- Ask specifically about corneal diseases, glaucoma, cataract, retinal diseases or other heritable ocular conditions.



- Ask questions designed to confirm or exclude your tentative diagnosis
  - significant positive
  - significant negative

- predict the physical and lab. finding likely to be present.

- any discrepancy between the history and physical examination requires explanation

# Ophthalmic examination

# Ophthalmic examination

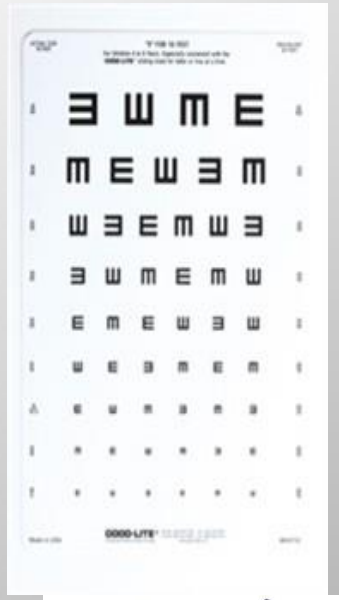
- Visual acuity
- External examination
- Motility and alignment
- Pupil examination
- Slit lamp biomicroscopy
- Tonometry
- Ophthalmoscopy
- Gonioscopy
- Retinoscopes

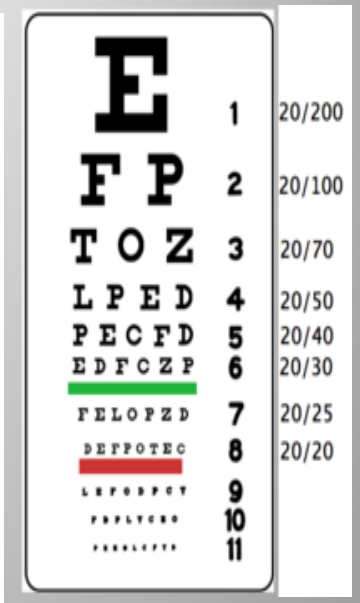
# Visual acuity:

- It is a vital sign (MUST)
- Good vision
  - intact neurological visual pathology
  - structurally healthy eye
  - Proper focus
- Subjective

# How to test vision?

- Display of different –sized targets shown at a standard distance from the eye.
- Snellen chart.
- 20/20, 6/6
- Uncorrected, corrected






# Testing poor vision:

- If the patient is unable to read the largest letter <(20/200)
- Move the patient closer e.g. 5/200
- If patient cannot read:
  - count fingers (CF)
  - hand motion (HM)
  - Light perception (LP)
  - No light perception (NLP)

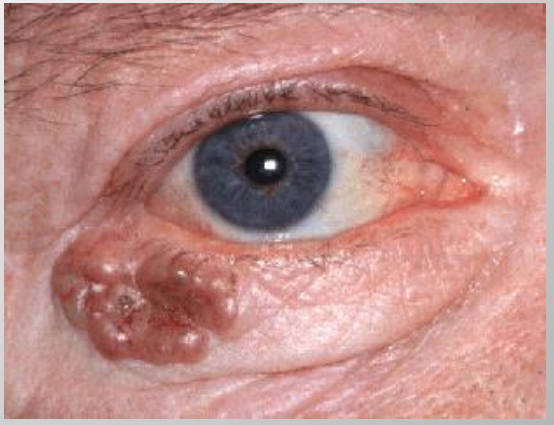
# External examination:

- Evaluate by gross inspection and palpation.
- Ocular adnexa. (lid, periocular area)
- Skin lesions, growths, inflammatory lesions.

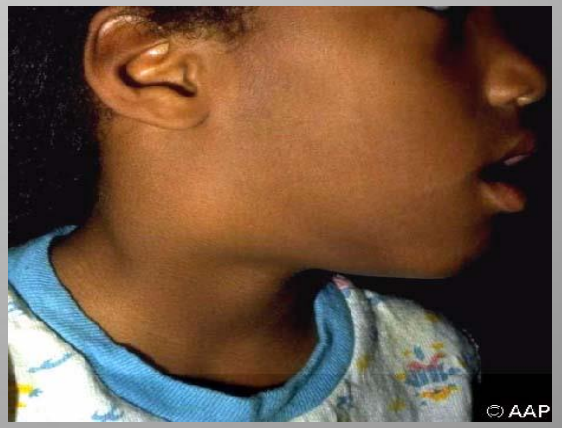
- Ptosis

- Proptosis, exophthalmos, enophthalmos

- Palpation of bony rim, periocular soft tissue.



- General facial examination e.g. enlarged preauricular lymph node, temporal artery prominence.



# Ocular motility:

***Evaluate*** - ***Alignment***

- ***Movements***

- Misalignment of the eyes

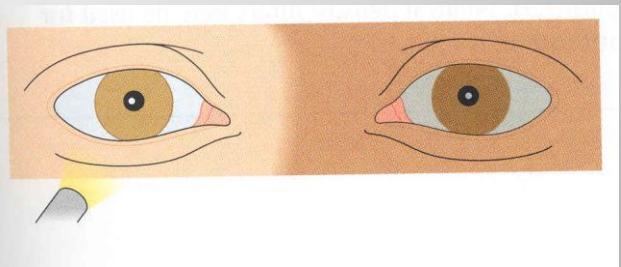
# Movement:

- Follow a target with both eyes in each of the four cardinal directions of gaze.

- Note
  - speed
  - smoothness
  - range
  - symmetry
  - unsteadiness of fixation
    e.g nystagmus

# Pupils:

Examine for size, shape, reactivity to both light and accommodation.



- Direct response and consensual response.
- Afferent pupillary defect (Marcus Gunn pupil)

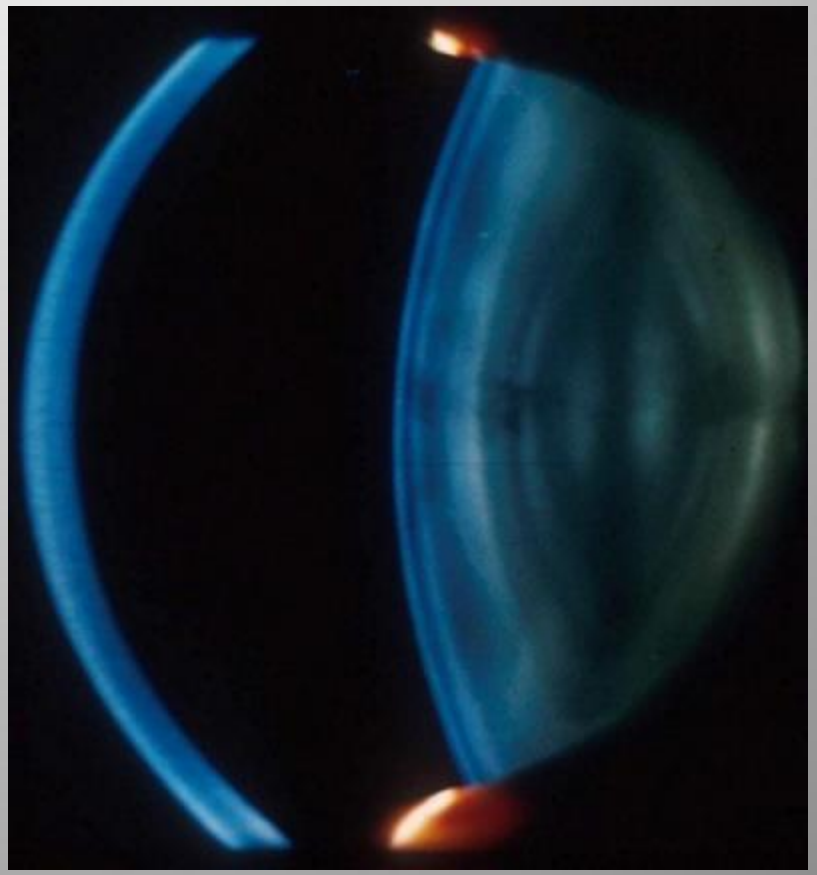
- **Causes of Pupillary abnormalities:**
  - neurologic disease
  - previous inflammation – adhesion
  - acute intraocular inflammation - spasm
    - atony
  - prior surgical trauma
  - effect of systemic or eye medication
  - benign variation of normal

# Slit lamp examination:

Is a table-mounted binocular microscope with special illumination source.

A linear slit beam of light is projected onto the globe – optic cross section of the eye.

- Slit lamp alone, the anterior half of the global (anterior segment) can be visualized.

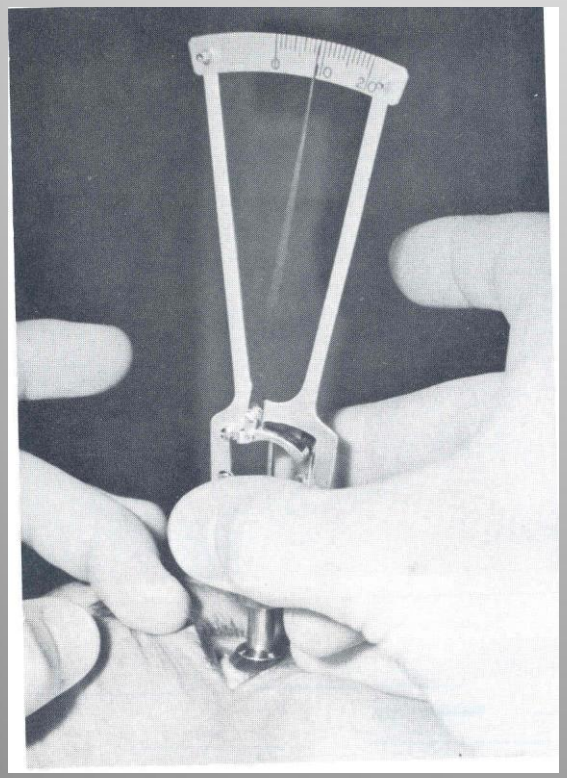


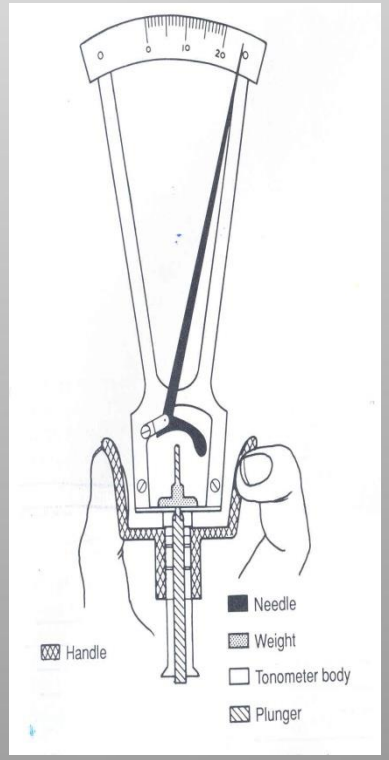
# Tonometry:

- The globe is a closed compartment with constant circulation of aqueous humor.
- This maintains the shape, and relatively uniform pressure within the globe.
- Normal pressure 10 – 21 mmHg.

# Types of tonometry:

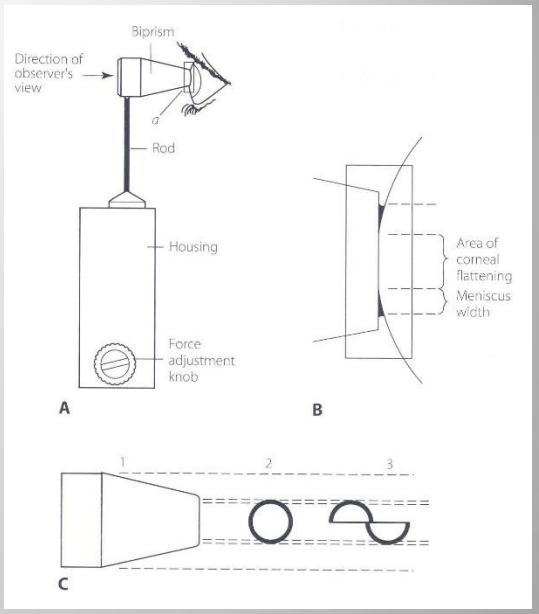
## Schiotz tonometer

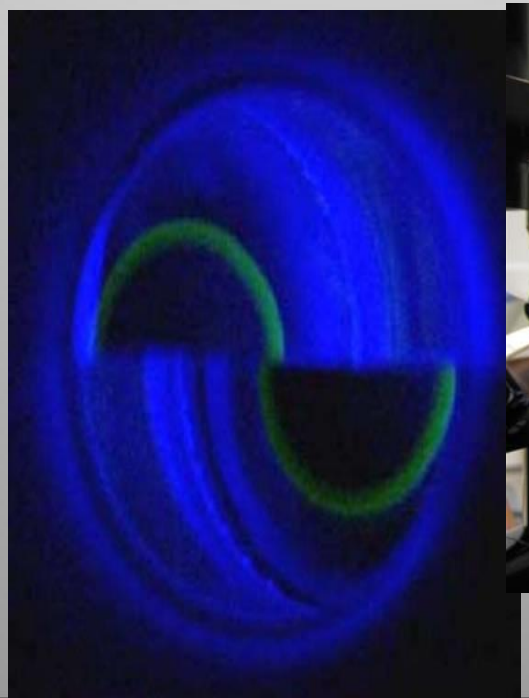


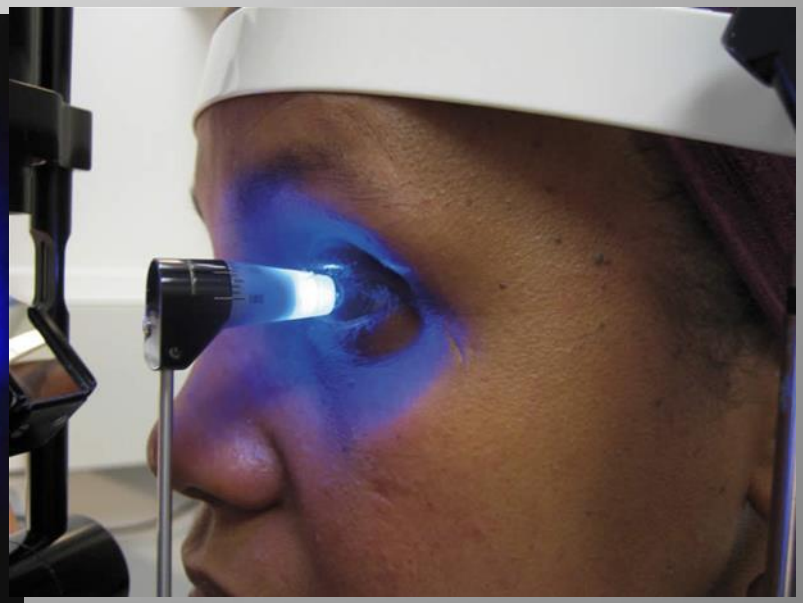



| Scale Reading | Plunger Load | | | |
|---|---|---|---|---|
| | 5.5 g | 7.5 g | 10.0 g | 15.0 g |
| 0.0 | 41.4 | 59.1 | 81.7 | 127.5 |
| 0.5 | 37.8 | 54.2 | 75.1 | 117.9 |
| 1.0 | 34.5 | 49.8 | 69.3 | 109.3 |
| 1.5 | 31.6 | 45.8 | 64.0 | 101.4 |
| 2.0 | 29.0 | 42.1 | 59.1 | 94.3 |
| 2.5 | 26.6 | 38.8 | 54.7 | 88.0 |
| 3.0 | 24.4 | 35.8 | 50.6 | 81.8 |
| 3.5 | 22.4 | 33.0 | 46.9 | 76.2 |
| 4.0 | 20.6 | 30.4 | 43.4 | 71.0 |
| 4.5 | 18.9 | 28.0 | 40.2 | 66.2 |
| 5.0 | 17.3 | 25.8 | 37.2 | 61.8 |
| 5.5 | 15.9 | 23.8 | 34.4 | 57.6 |
| 6.0 | 14.6 | 21.9 | 31.8 | 53.6 |
| 6.5 | 13.4 | 20.1 | 29.4 | 49.9 |
| 7.0 | 12.2 | 18.5 | 27.2 | 46.5 |
| 7.5 | 11.2 | 17.0 | 25.1 | 43.2 |
| 8.0 | 10.2 | 15.6 | 23.1 | 40.2 |
| 8.5 | 9.4 | 14.3 | 21.3 | 38.1 |
| 9.0 | 8.5 | 13.1 | 19.6 | 34.6 |
| 9.5 | 7.8 | 12.0 | 18.0 | 32.0 |
| 10.0 | 7.1 | 10.9 | 16.5 | 29.6 |
| 10.5 | 6.5 | 10.0 | 15.1 | 27.4 |
| 11.0 | 5.9 | 9.1 | 13.8 | 25.3 |
| 11.5 | 5.3 | 8.3 | 12.6 | 23.3 |
| 12.0 | 4.9 | 7.5 | 11.5 | 21.4 |
| 12.5 | 4.4 | 6.8 | 10.5 | 19.7 |
| 13.0 | 4.0 | 6.2 | 9.5 | 18.1 |
| 13.5 | | 5.6 | 8.6 | 16.5 |
| 14.0 | | 5.0 | 7.8 | 15.1 |
| 14.5 | | 4.5 | 7.1 | 13.7 |
| 15.0 | | 4.1 | 6.4 | 12.6 |
| 15.5 | | | 5.8 | 11.4 |
| 16.0 | | | 5.2 | 10.4 |
| 16.5 | | | 4.7 | 9.4 |
| 17.0 | | | 4.2 | 8.5 |
| 17.5 | | | | 7.7 |
| 18.0 | | | | 6.9 |
| 18.5 | | | | 6.2 |
| 19.0 | | | | 5.6 |
| 19.5 | | | | 4.9 |
| 20.0 | | | | 4.5 |

# Goldmann applanation tonometer





# Tonopen

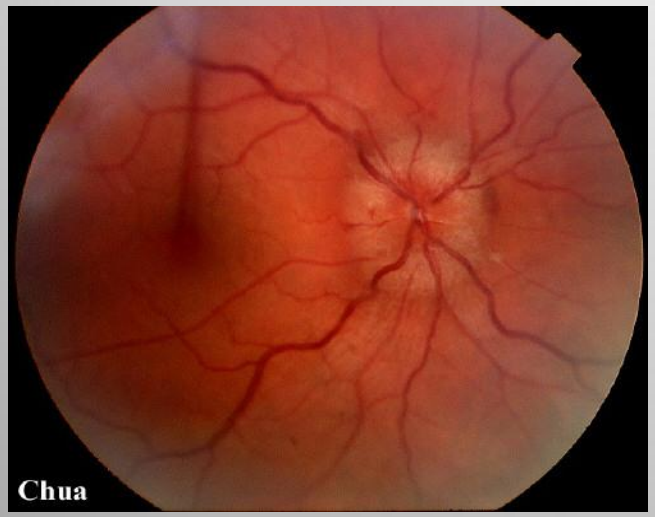

# Ophthalmoscopy:

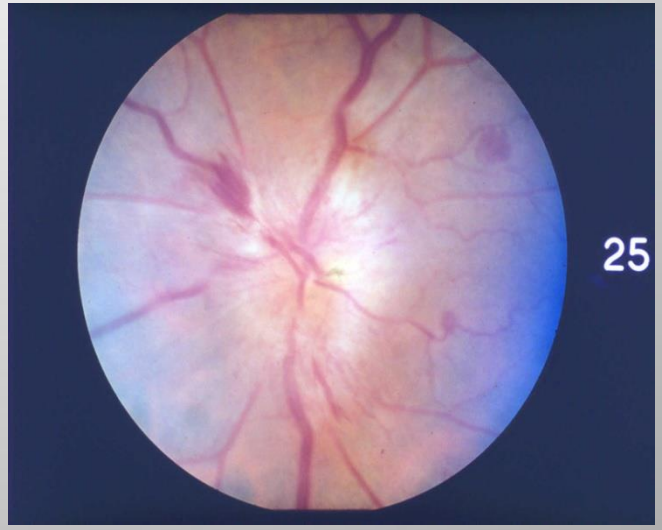
- ***Direct ophthalmoscopy:***
- handheld instrument.
- standard part of the general medical examination.
- Portable

# *Indirect ophthalmoscope*

# Indirect Ophthalmoscoy:

1. provide much wider field of view
2. less magnification (3.5X with 20D lens)
3. brighter light source – better view.
4. Binocular – steroscopic view.
5. Allow entire retina examination till the periphery.

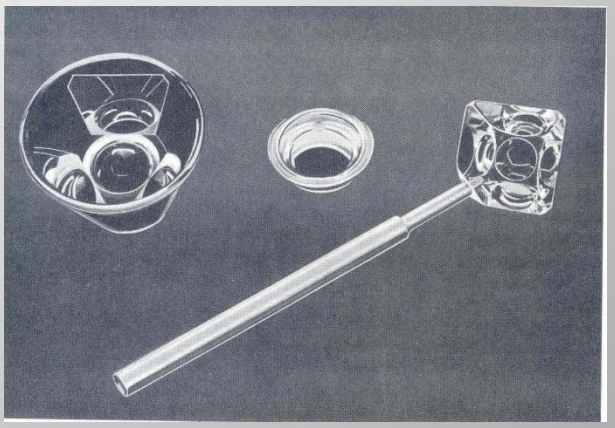

Chua

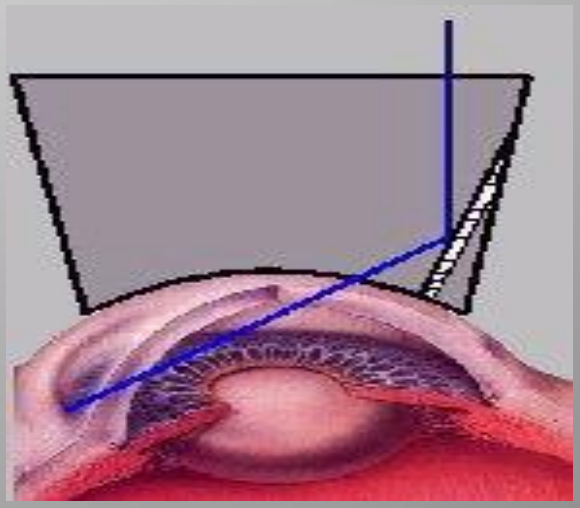

25

Disadvantage:

1. Inverted retinal image.
2. Brighter light is uncomfortable to the patient.

- Special lenses:
  - Gonio lens
  - wide field contact lenses allow evaluation of the posterior segment.





# Retinoscope

# Retinoscopy


Thank you