



Kursus for øjenlægepersonale , Kolding 30.-31.jan. 2015  
Danske Øjenlægers Organisation

# GLAUKOM BAGGRUND OG UNDERSØGELSER

# Hvad er den hyppigste årsag til blindhed på verdensplan?

- Grå stær (Cataract)
- Hvad er den næsthyppigste årsag til blindhed på verdensplan?

- **GRØN STÆR (Glaukom)**

- Estimeret til at være ansvarlig for ca 12 % af blindhed
- Ca. 60-70 mio på verdensplan med glaukom
  - Ca. 20 mio er blinde af sygdommen

# Glaukom hyppighed i DK

- 50.- 60.000 (1%) med glaukom i DK
- 100.- 150.000 med okulær hypertension
- I øjenlægepraksis i DK ses ca. 34.434 glaukom patienter årligt<sup>1</sup>
- I gennemsnit ses ca. 32,8 patienter af en praksis øjenlæge dagligt
  - 3,8 glaukom patienter dagligt
  - 1,0 glaukom suspects dagligt
  - Samlet 4,8 glaukom patienter dagligt svt. 15 % af alle patienter der ses i praksis

<sup>1</sup> Thygesen J et al. Ugeskr Laeger 2000 May;22 162(21):3028-33 The Journal of The Danish Medical Association

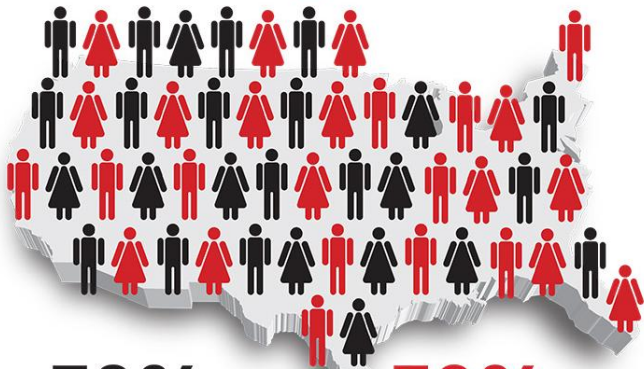
# Glaukom hyppighed i DK

- I gennemsnit 118 dage mellem glaukom patienters kontroller i praksis
- Svt. 3 besøg årligt per glaukom patient
- 93 % af glaukom patienter og 19 % af glaukom suspects i praksis får anti-glaukomatøs behandling
- 6,4% (49 ud af 764) af glaukom patienterne i praksis havde synsfeltsdefekter svt "Social Blindhed"
- Estimeret er der således 2.200 glaukom patienter i praksis regi (6,4 % ud af 34.434) som er Socialt Blinde

Kilde: Thygesen J et al. Ugeskr Laeger 2000 May;22 162(21):3028-33 The Journal of The Danish Medical Association

# 50 % af glaukom patienter er udiagnosticerede i Europa og USA.

2.7 million people in the U.S. have **glaucoma**



**50%  
KNOW**

**50%  
DON'T KNOW**

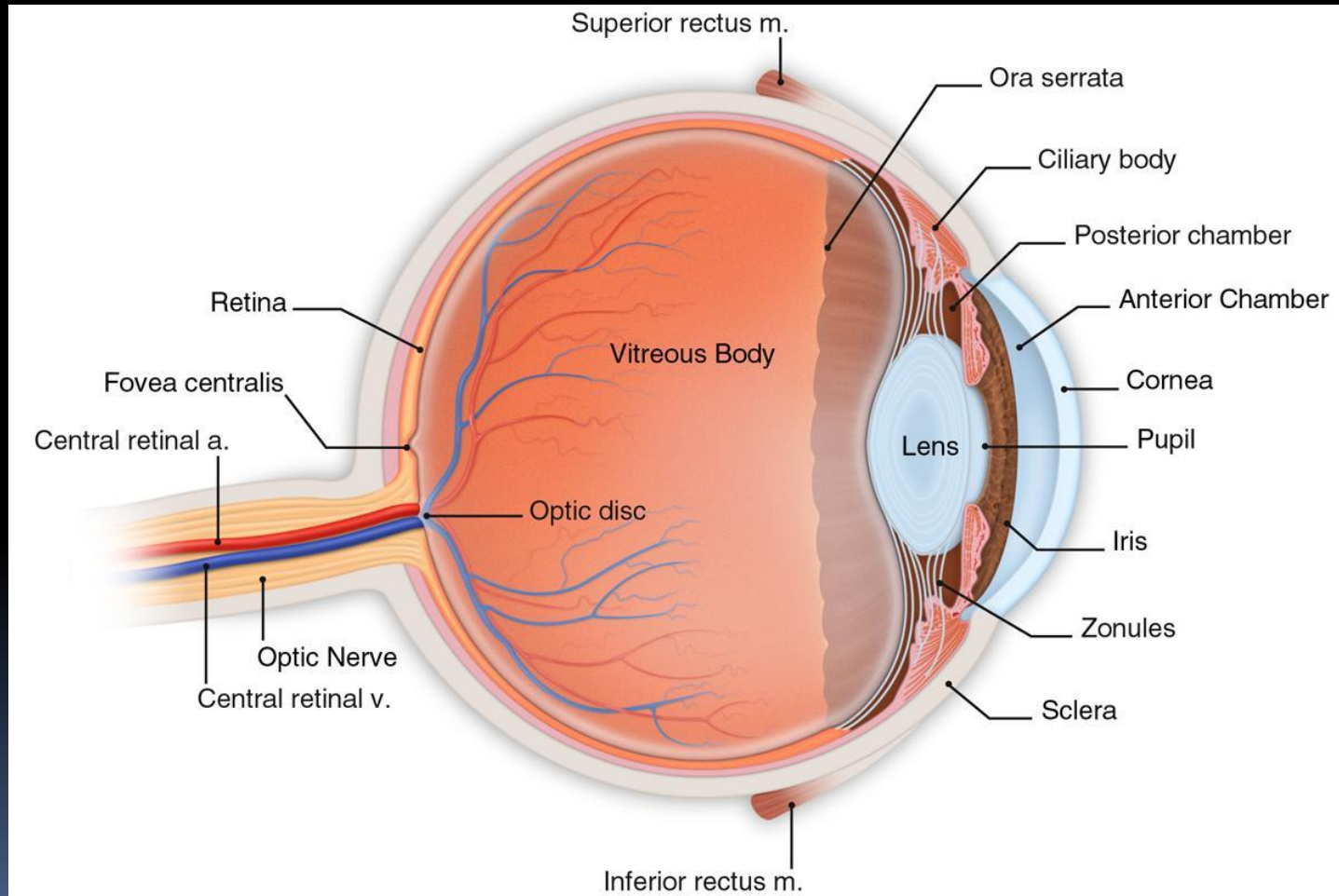
Population Studied	Percentage of Cases Previously Undiagnosed
South Africa (Temba) <sup>24</sup>	87% (POAG)
Chennai – Southern India <sup>56</sup>	98.5% (POAG)
Tema (West Africa) <sup>26</sup>	97% (POAG)
Los Angeles Latinos (LALES) <sup>12</sup>	75% (POAG)
Australia – Blue Mountains Eye Study <sup>57</sup>	51% (POAG)
Melbourne (Visual Impairment Project) <sup>7</sup>	50% (POAG)
Rotterdam <sup>58</sup>	53% (POAG)

# Glaukom (grøn stær) definition

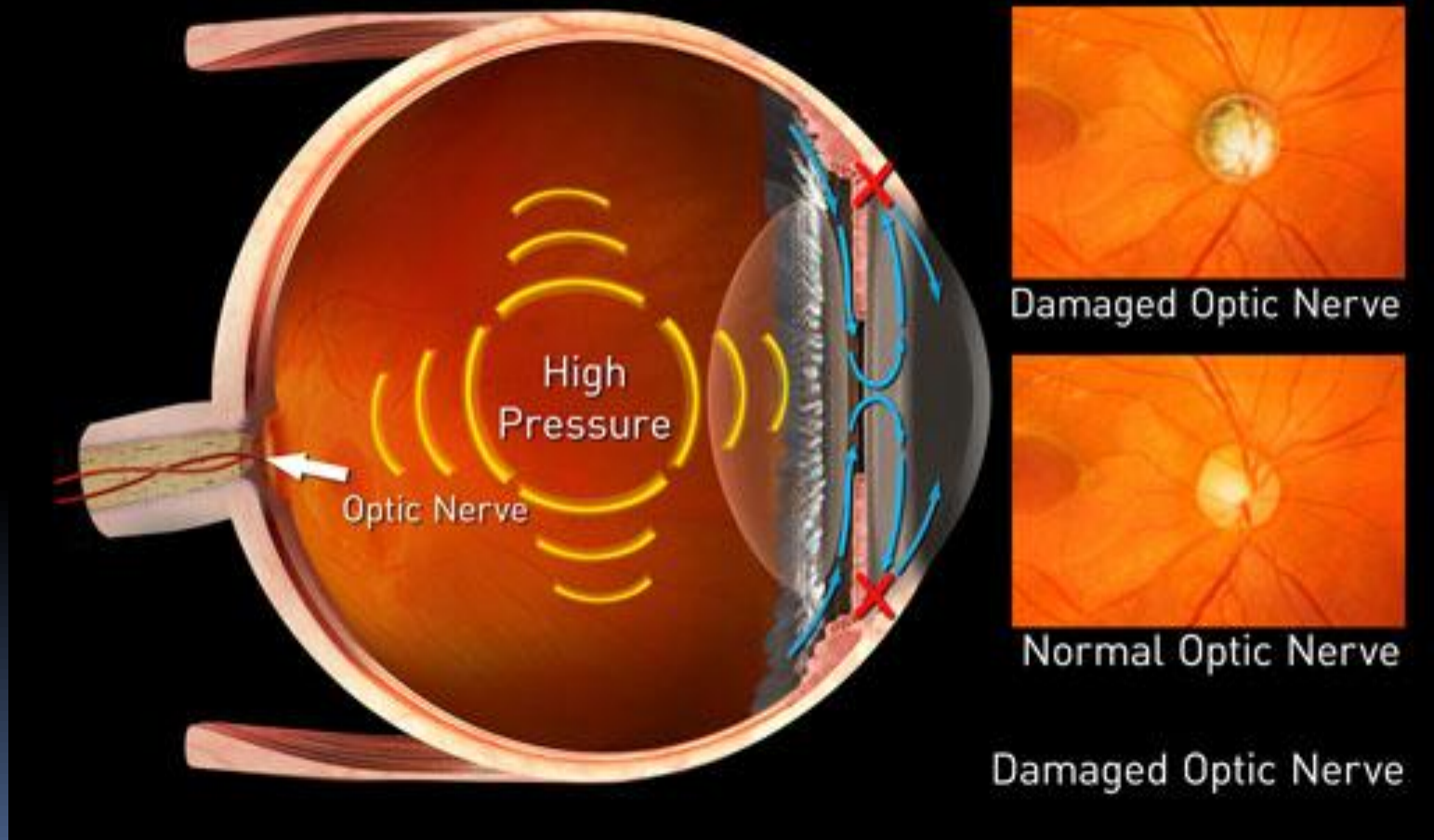
Glaukom er betegnelsen for en gruppe af øjensygdomme med en progressiv degeneration af synsnerven (opticus neuropati) ledsaget af et karakteristisk synsfeltstab.

Der opstår karakteristiske degenerative forandringer svarende til synsnervehovedet (papillen), og i nethindens (retinas) nervetrådslag  
→ Udhuling (= ekskavation) af papillen

# Øjets anatomi



# Det intraokulære tryk (IOT (IOP)): den væsentligste risikofaktor



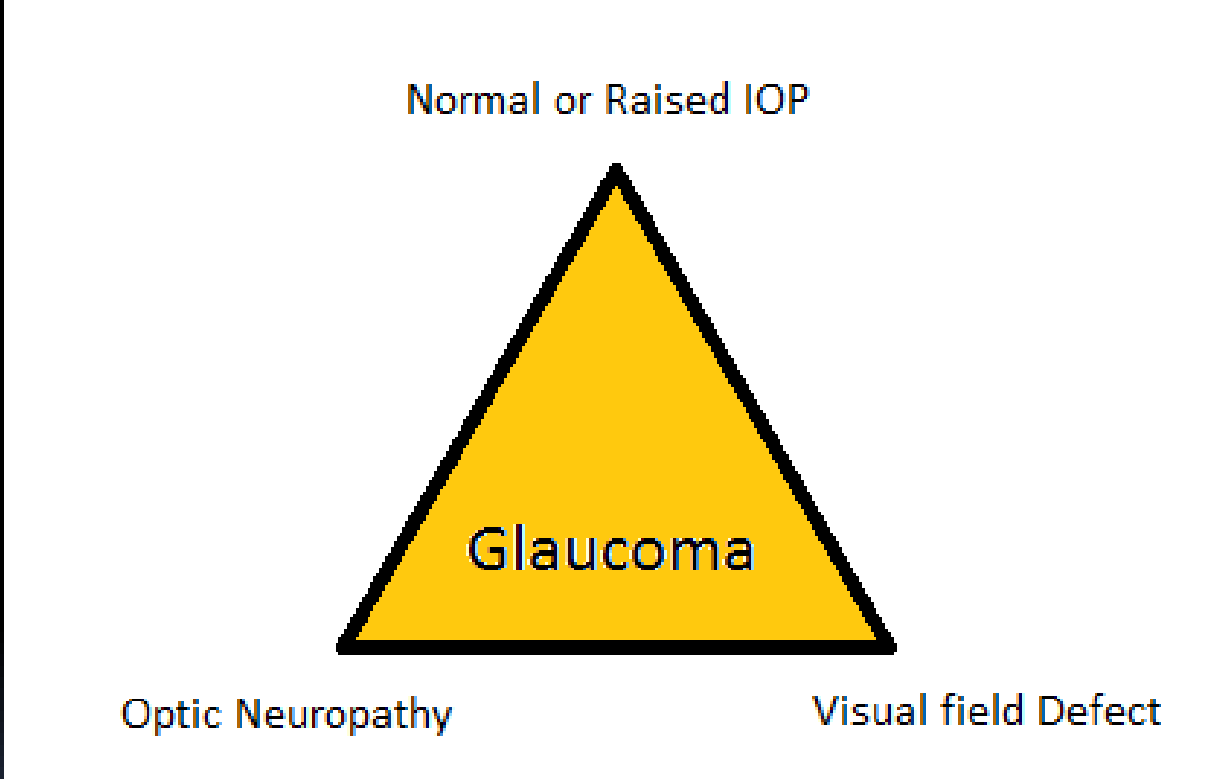


# Glaukomatøs skade

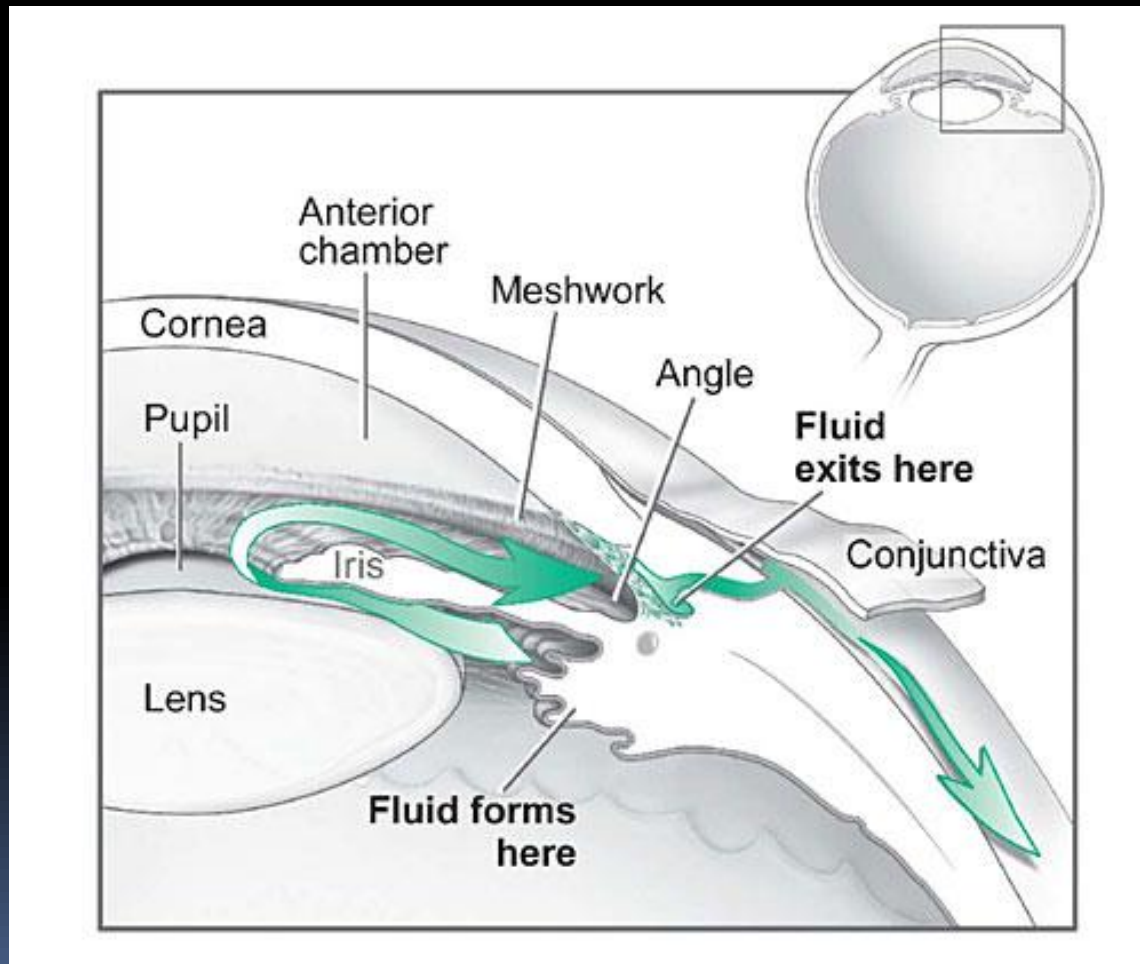
En langsomt udviklende udtynding af synsnervehovedet (opticis neuropati). Dette er karakteriseret ved udhulning af synsnervehovedet og skader på nethindens nervefibre der kan medføre perifert og senere centralt synstab.

## Risikofaktorer

Alder, køn, race, højt øjentryk (>21 mmHg), lavt blodtryk om natten, arvelighed

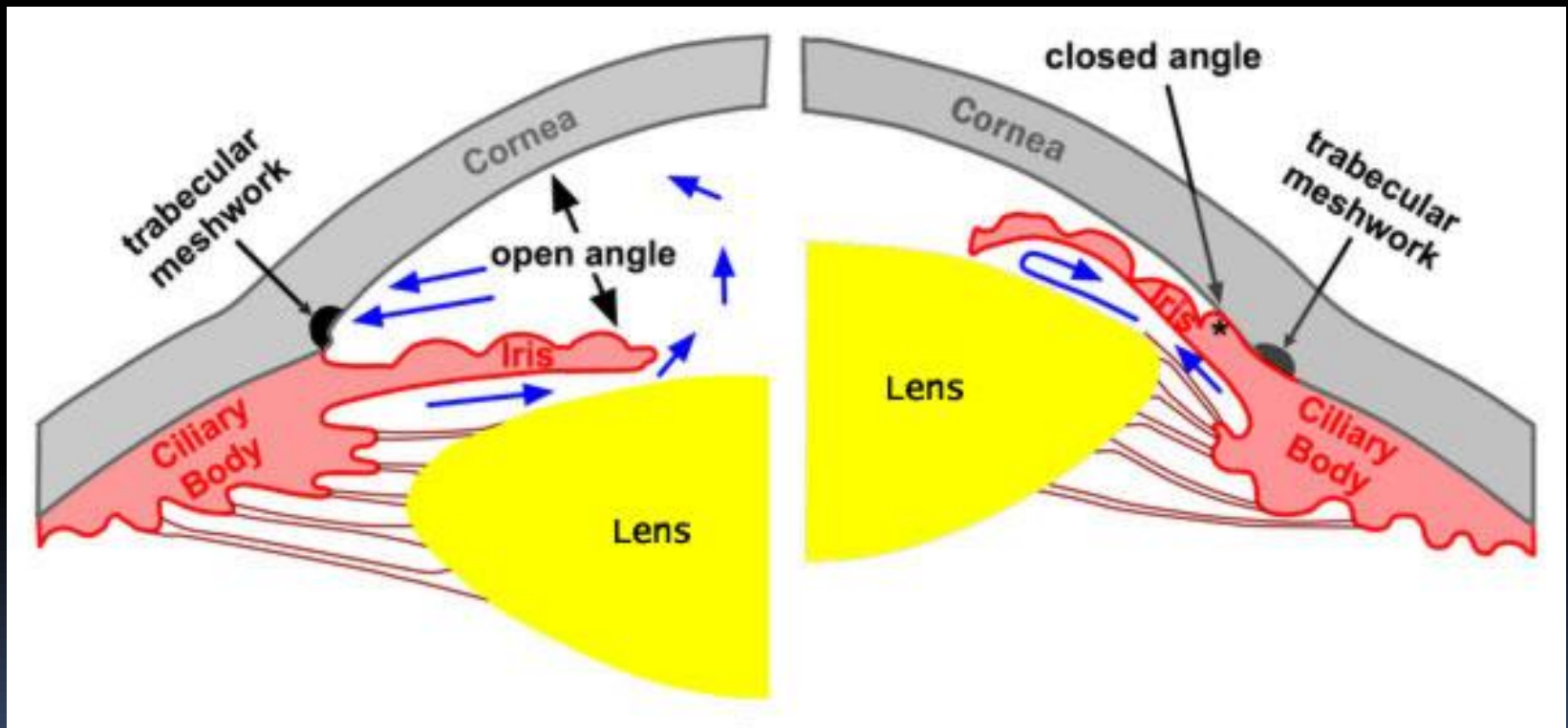


# Kammervandets produktion og afløb



# Klassifikation af glaukom

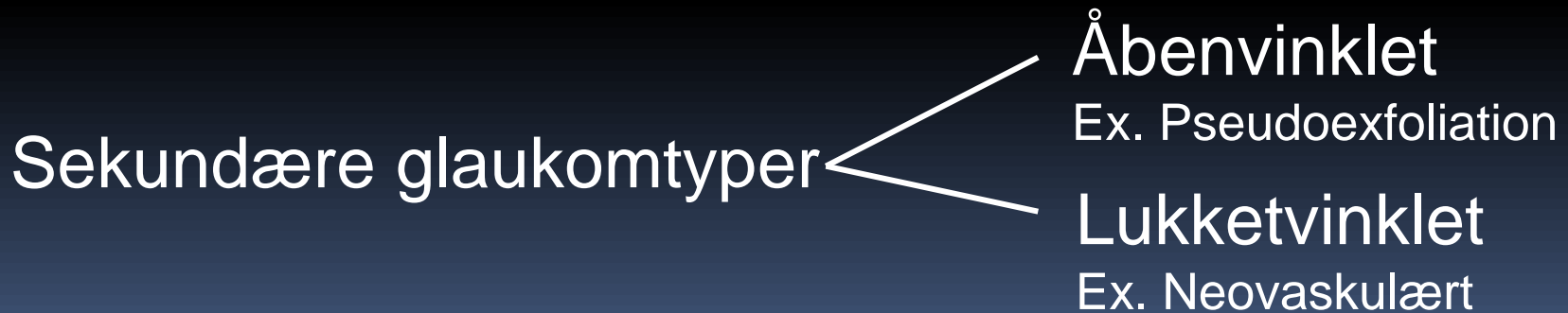
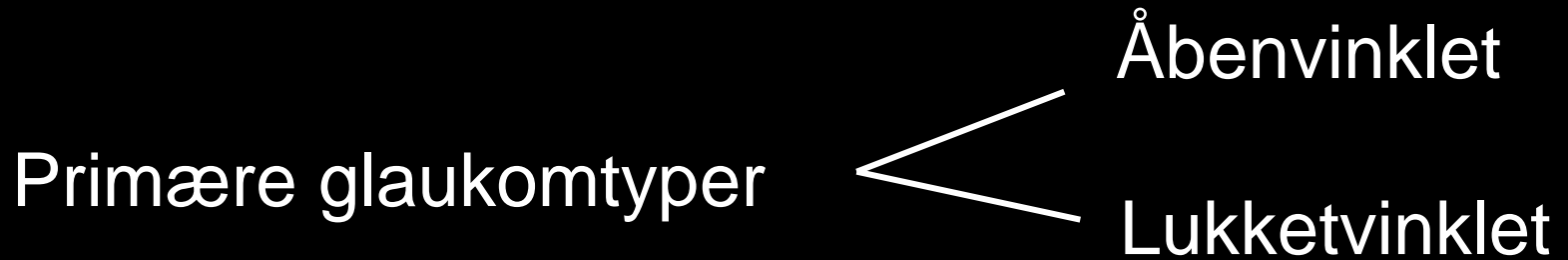
## åben eller lukket vinkel?



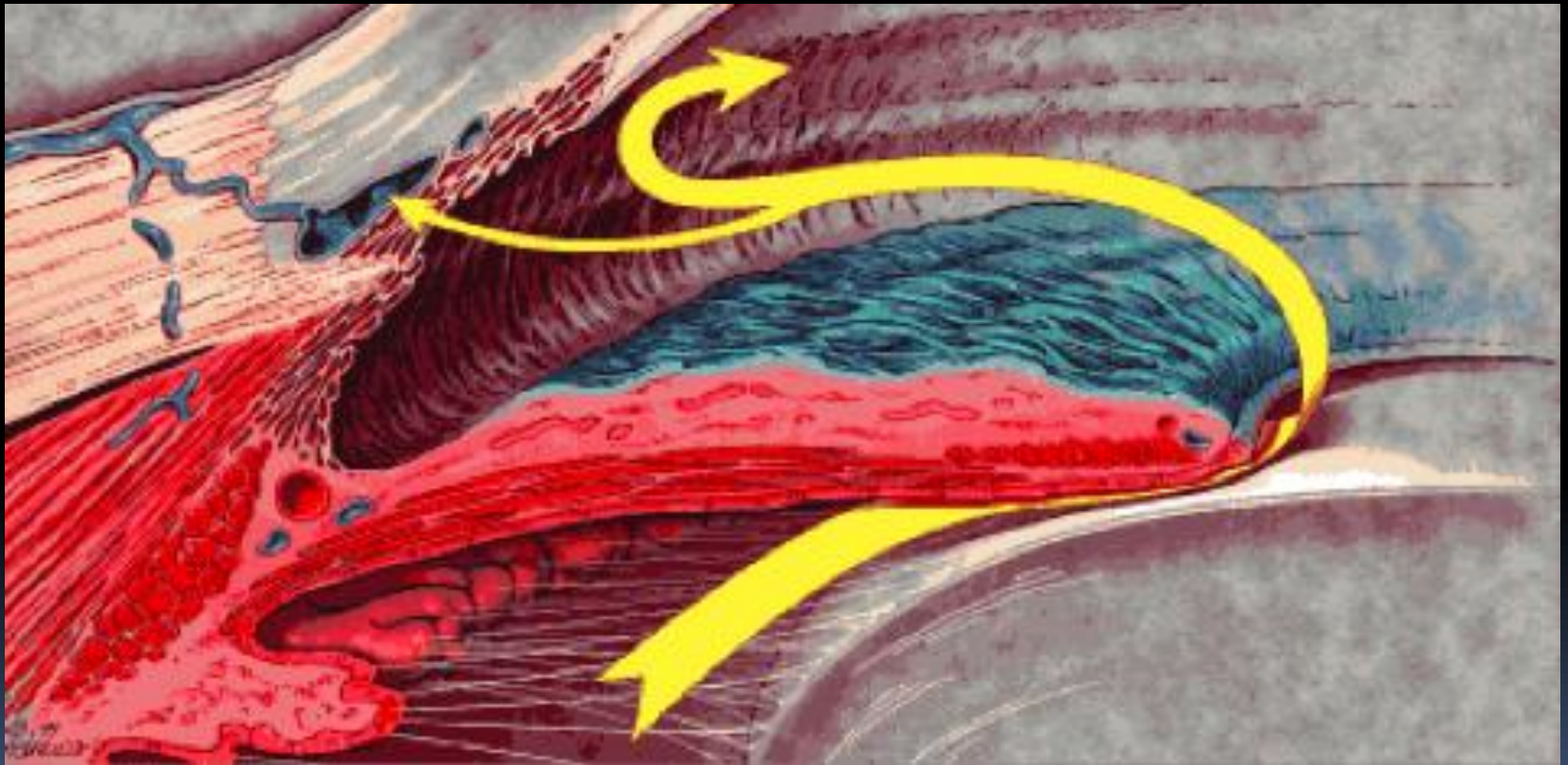
# Klassifikation af glaukom primært eller sekundært?

- Primære glaukomer
  - Ingen anden primær øjensygdom, systemisk sygdom eller behandlingsfølger
  - Primært åbenvinklet glaukom er det hyppigste
    - Udgør ca. 57 % af alle glaukomer
- Sekundære glaukomer
  - En følge af anden øjensygdom, systemisk sygdom eller behandlinger

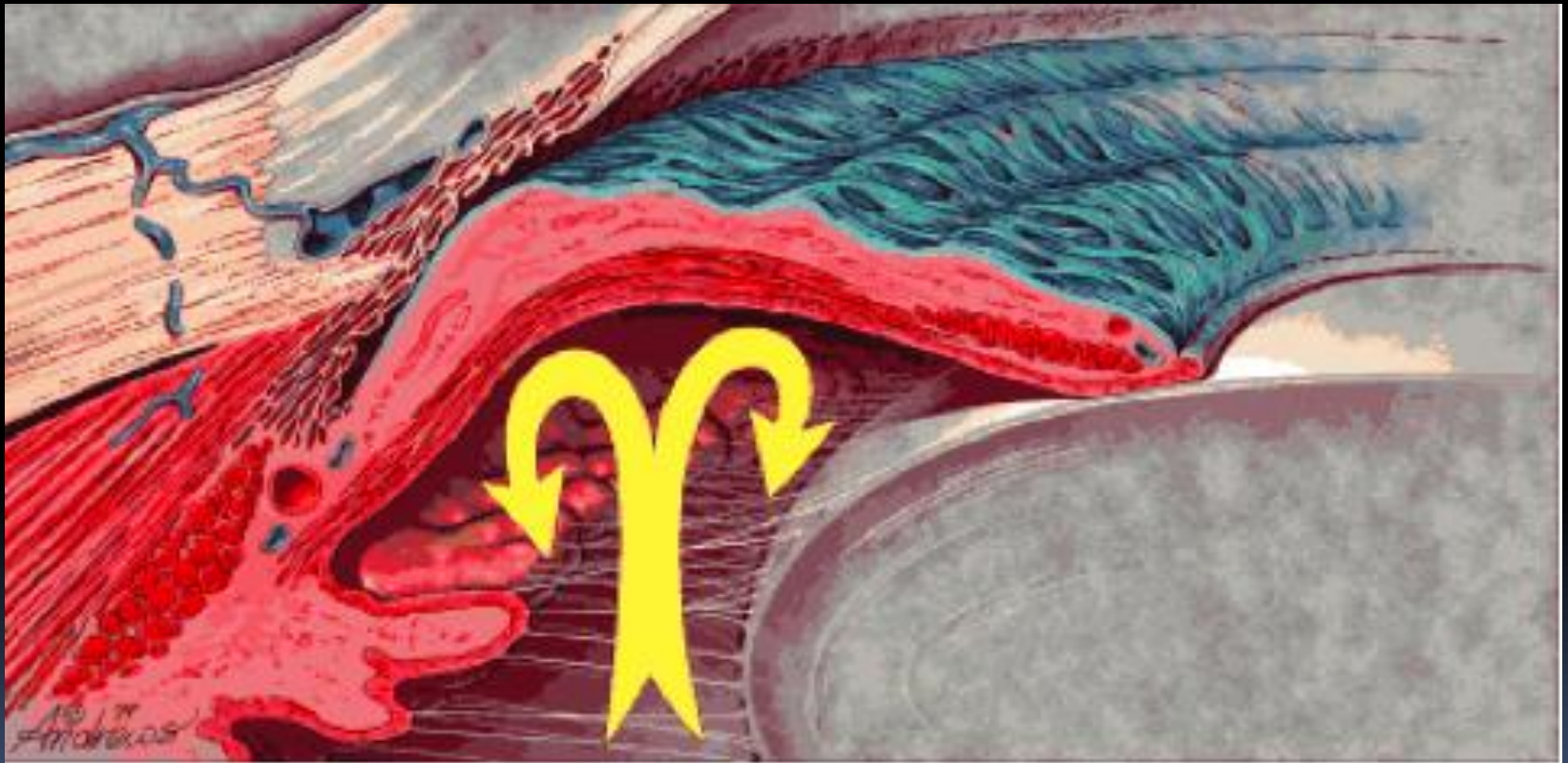
# Glaukom typer (klassifikation)



# Åbenvinklet glaukom (Open Angle Glaucoma, OAG)



# Primær lukketvinkel glaukom (Primary Angle-Closure Glaucoma, PACG)





# Primær lukketvinkel glaukom (Primary Angle-Closure Glaucoma, PACG)

PACG: 25 % blinde!

POAG: 10 % blinde

## Årsager:

Pupilblok (75-80 %)

Linseinduceret (5-8 %)

Plateauiris (10-12 %)

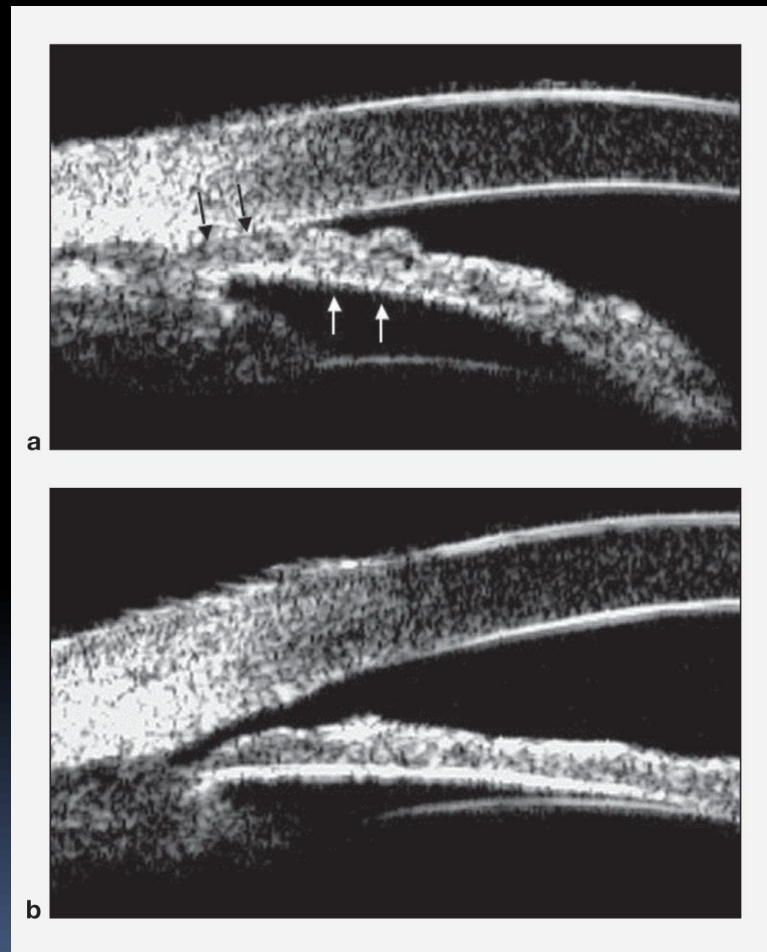
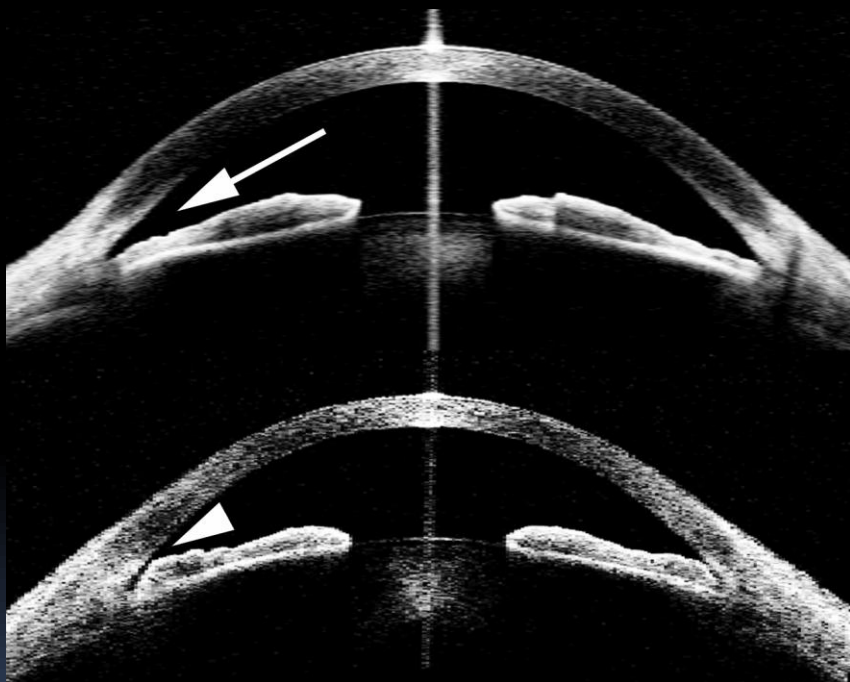
Malignt glaukom (2-3 %)

## Disponerende faktorer til pupilblok:

- Alder (smallere forreste kammer)
- Kvinder
- Asiatisk/Grønlandsk herkomst
- Familiær disposition?









# Lukket vinkel glaukom (Angle-Closure Glaucoma, ACG)



# Lukket vinkel glaukom (Angle-Closure Glaucoma, ACG)

SYMPTOMS OF  
**GLAUCOMA**

healthkart.!

 <p>Extreme Headache</p>	 <p>Distorted Vision</p>	 <p>Eye Reddening</p>
 <p>Severe Eye Pain</p>	 <p>Vomiting</p>	 <p>Halos Around Lights</p>

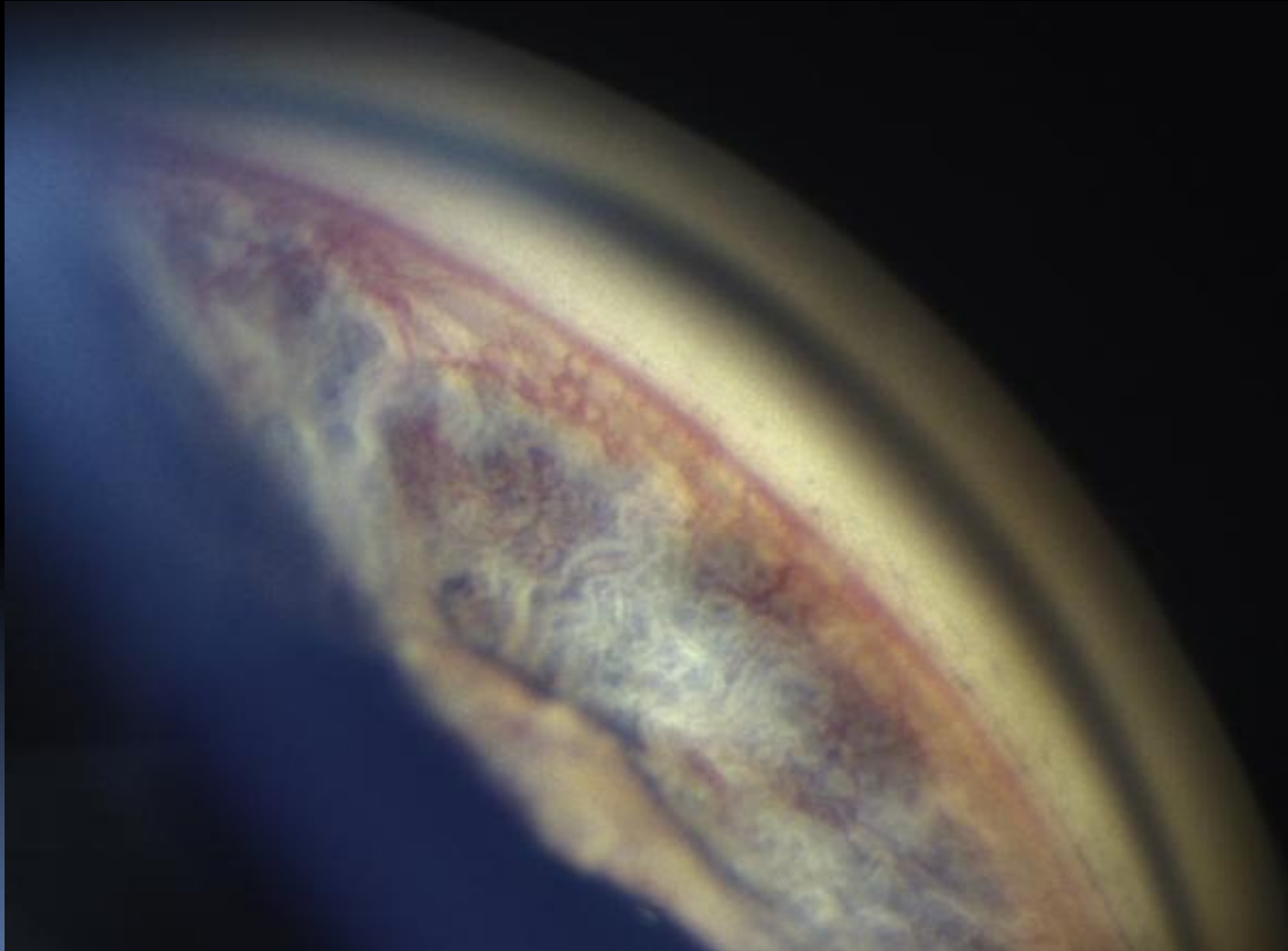
# Akut lukket-vinklet glaukom

Laser-behandling

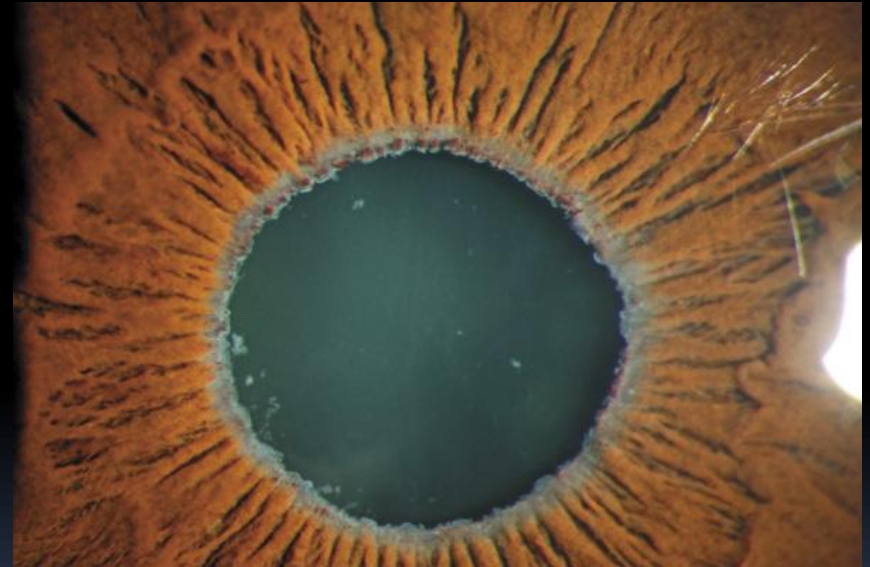
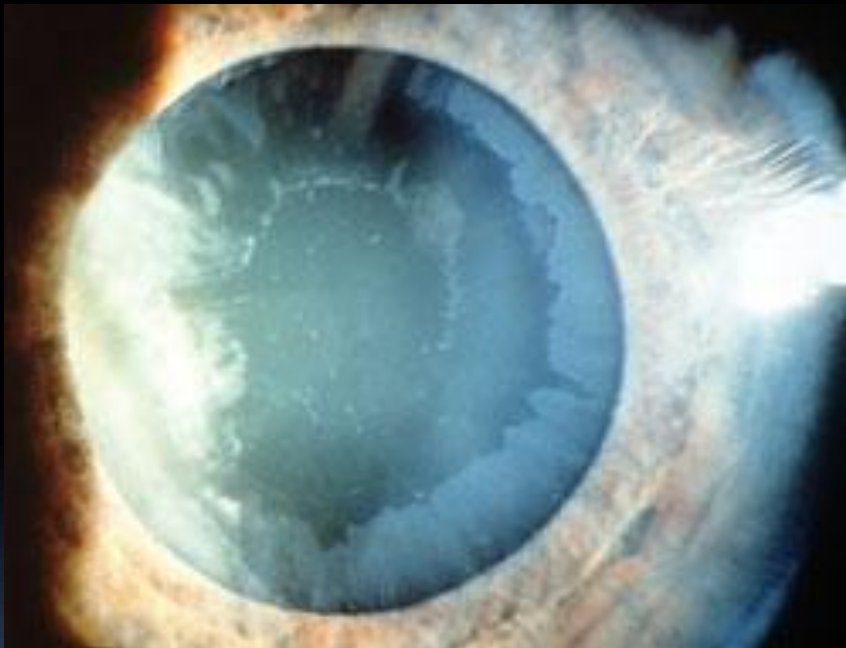
Hul i iris (iridotomi) med en YAG laser



Neovaskulært glaukom  
(sekundær lukketvinklet)

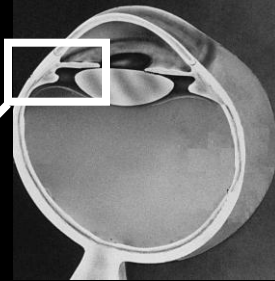
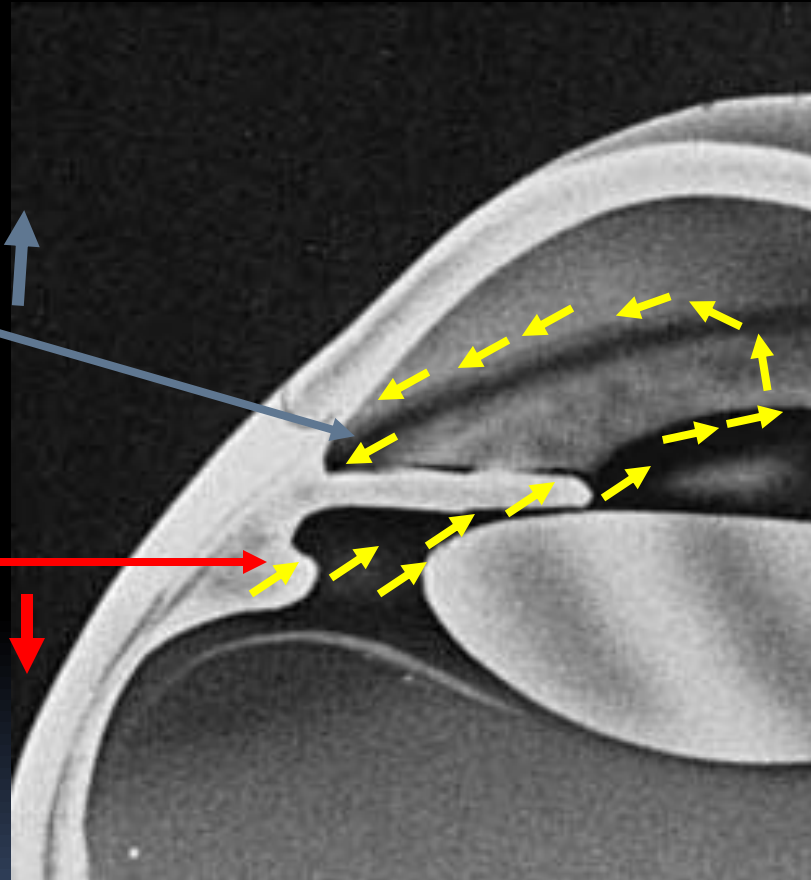


# Pseudoexfoliationsglaukom (sekundær åbenvinklet)

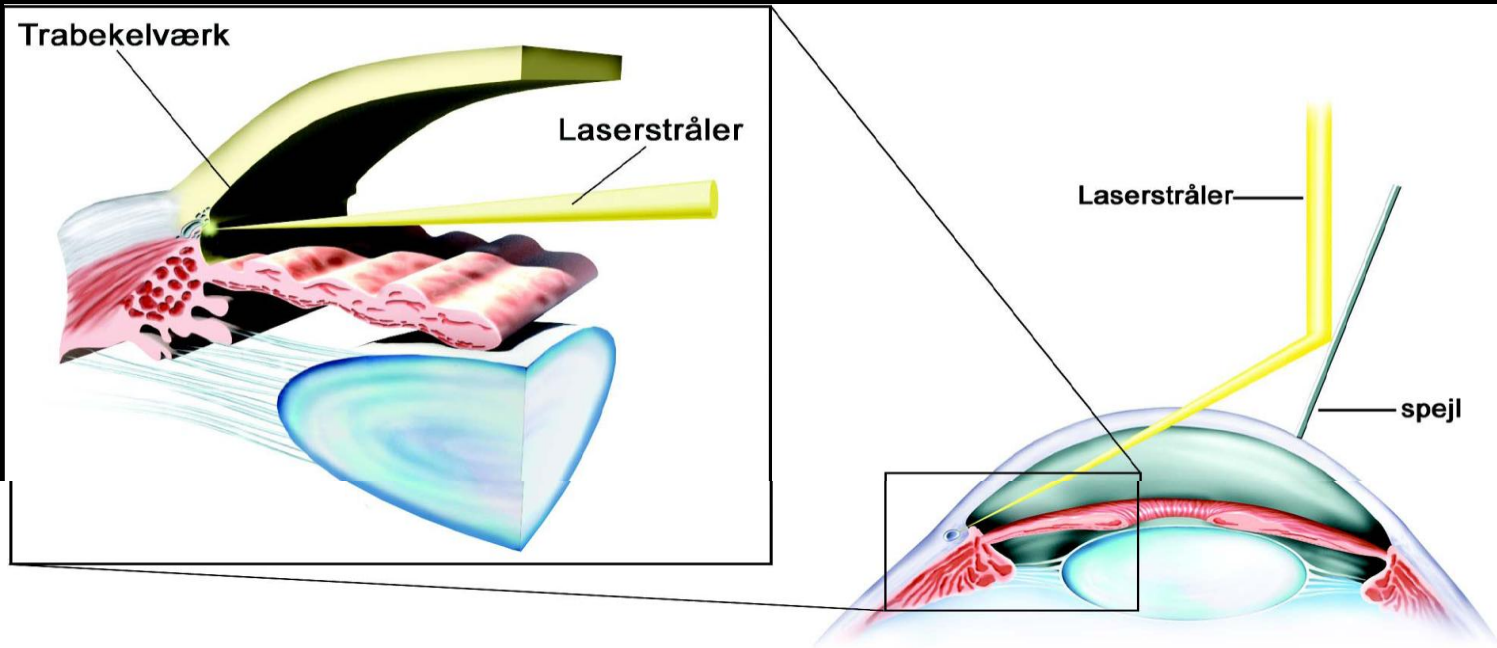


# Medicinsk behandling af glaukom

Sympathomimetika  
Prostaglandinanaloger  
Miotika  
Karboanhydrase hæmmere  
Beta blokkerere  
Sympatomimetika



# Laser behandling (åbenvinklet glaukom)





**Medicin virker ikke på de  
patienter der ikke tager den**

# Hvor stort er problemet?

Amerikansk undersøgelse:



**30 % af recepterne bliver ikke indløst**

**11 % tager sjældent deres medicin**

**11 % holder kortere pauser hver måned**

**12 % holder kortere pauser 3-4 gange om året**

**12 % glemmer af og til at tage deres medicin**

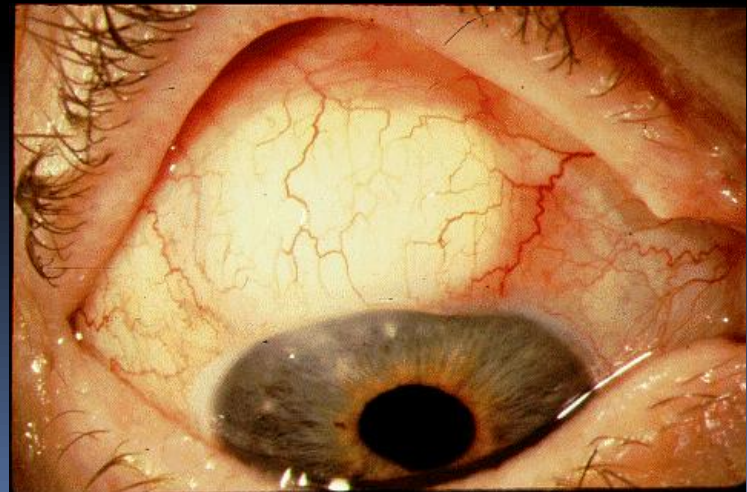
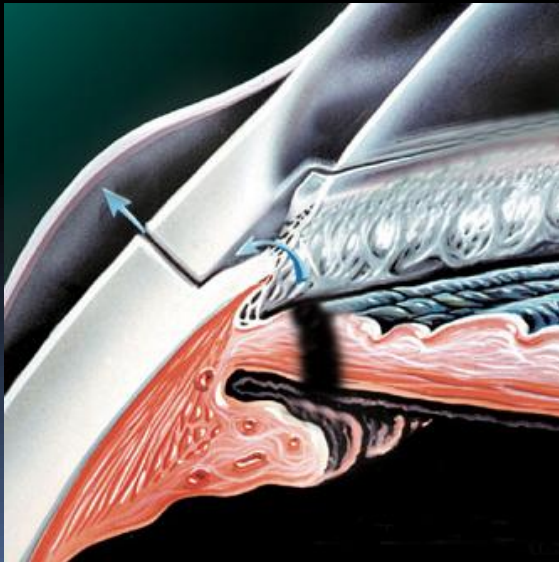
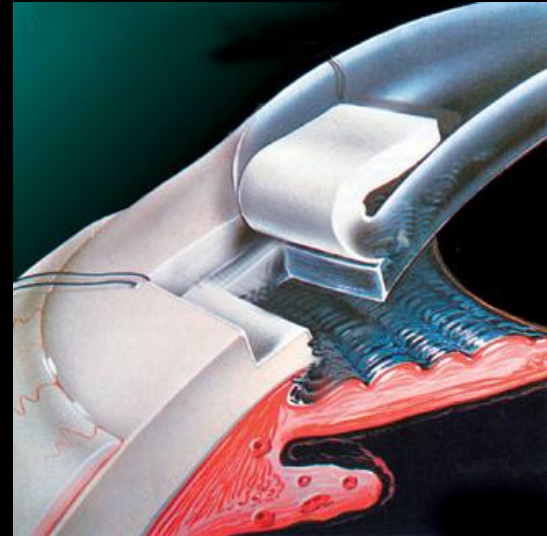
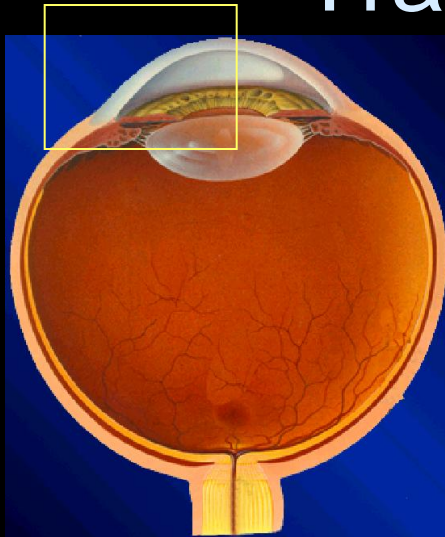
**12 % tager deres medicin lidt uregelmæssigt**

**12 % følger skemaet til punkt og prikke**

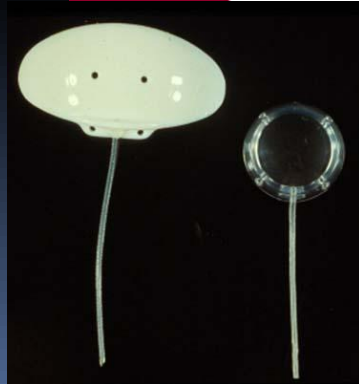
# Kirurgi mod glaukom

- Hvis IOP er for højt på trods af behandling
- Hvis øjendråber tolereres dårligt
- Patient-ønske

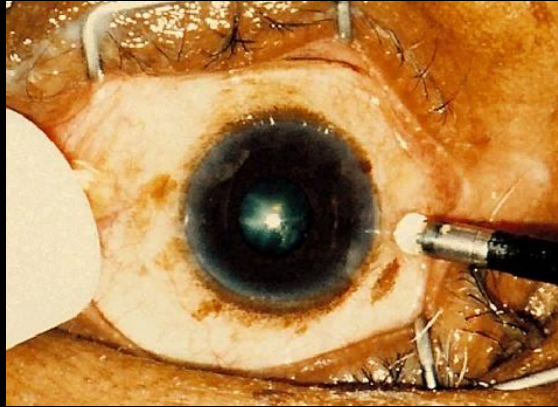
# Trabekulektomi



# Dræn-anlæg



# Cyclodiode-laserbehandling - sidste udvej



# Glaukom-typer



# Primær kongenit glaukom

## Symptomer

### 3 kardinalsymptomer

- Fotofobi (lyssky)
- Tåreflåd
- Blepharospasmus



Courtesy John Thygesen



# Behandling (PCG)

- Trabekulotomi

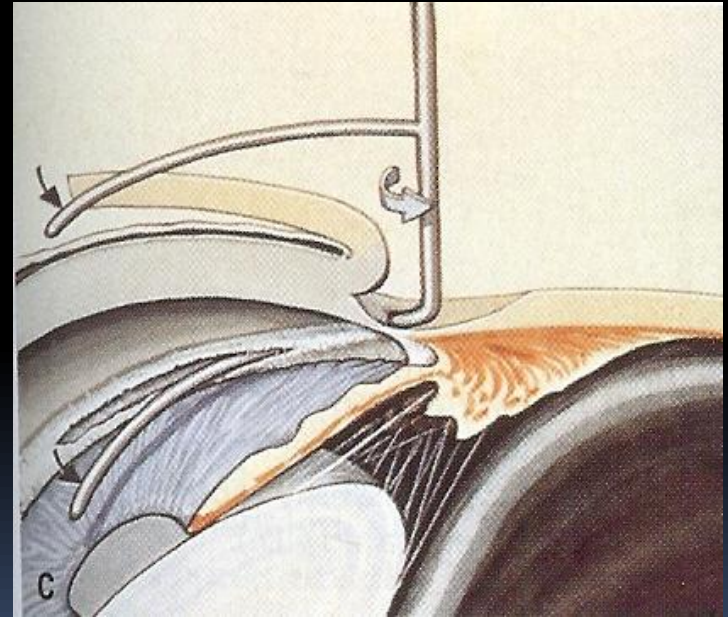
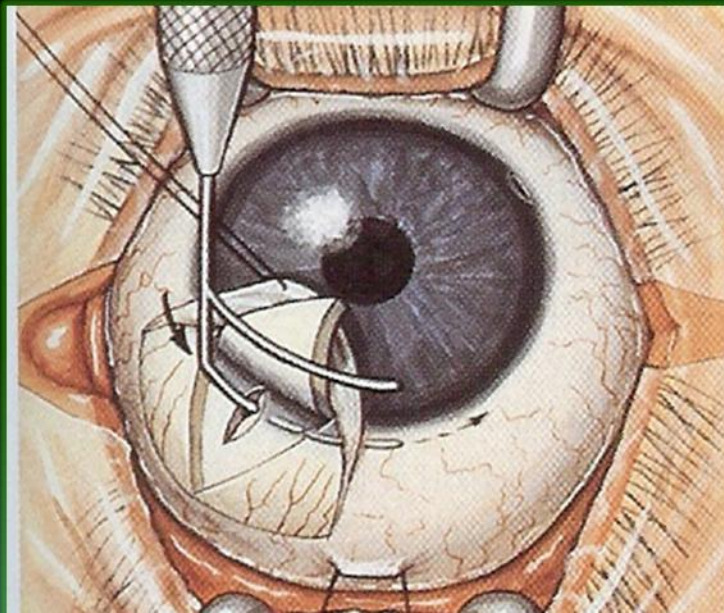
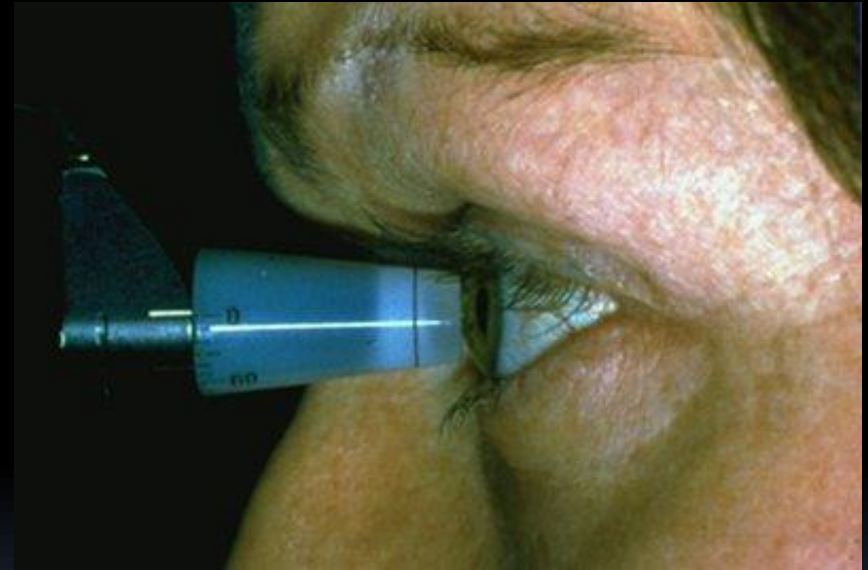


Image courtesy Waldrop

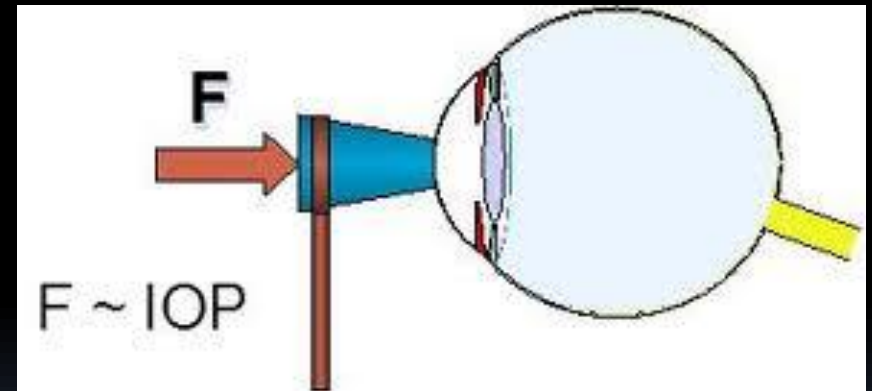
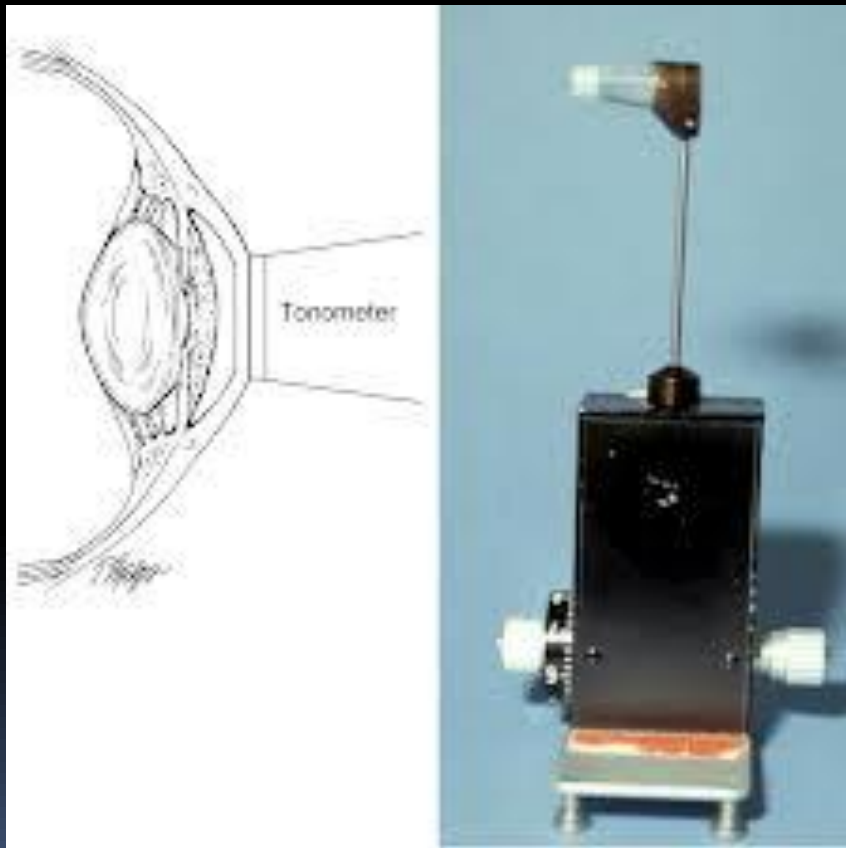
# Glaukom undersøgelser

- Intraokulært tryk (IOT; Eng: IOP)
- Central hornhinde (cornea) tykkelse (CCT)
- Anterior/central kammerdybde (ACD eller CKD)
- Refraktion og brillestyrke
- Gonioskopi
- Papilundersøgelse med oftalmoskopi samt fotos
- Perimetri (synsfeltsundersøgelse)
- Papil OCT

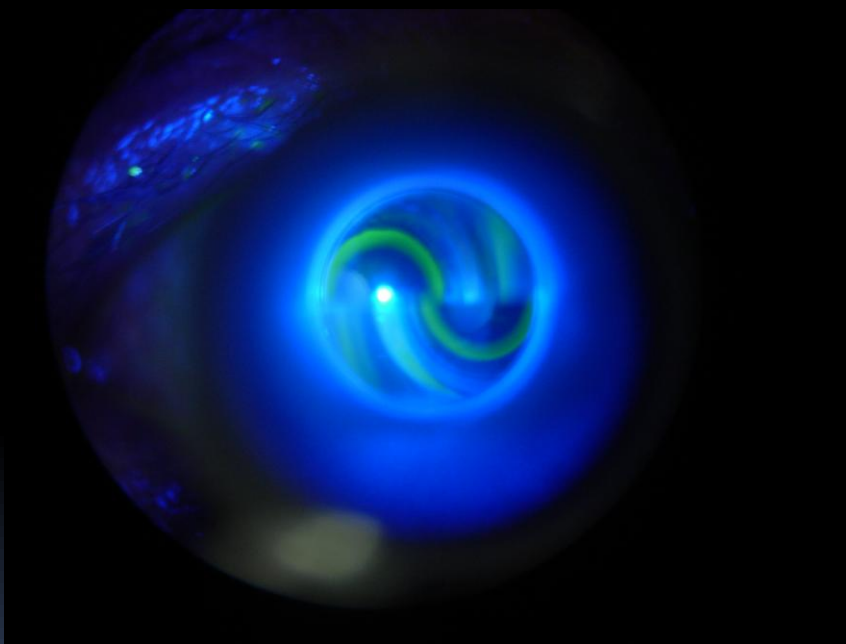
# Måling af det intraokulære tryk (tension): Goldmann applanatorisk tension (GAT)



# Goldmann applanations tryk



# Goldmann applanations tryk

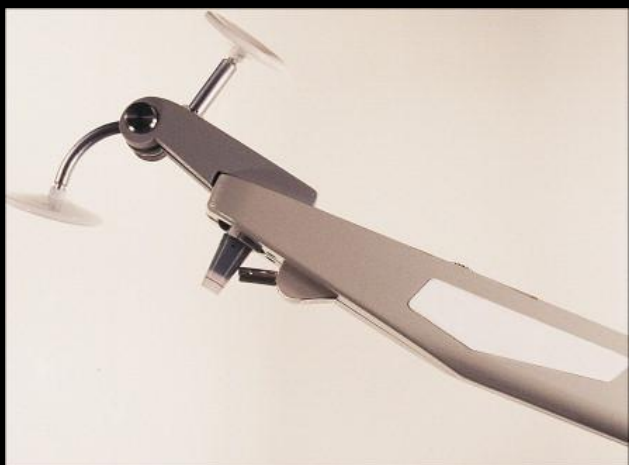


# Måling af det intraokulære tryk (tension): Lufttonometer (Non-Contact Tonometry)



# Måling af det intraokulære tryk (tension): Andre metoder

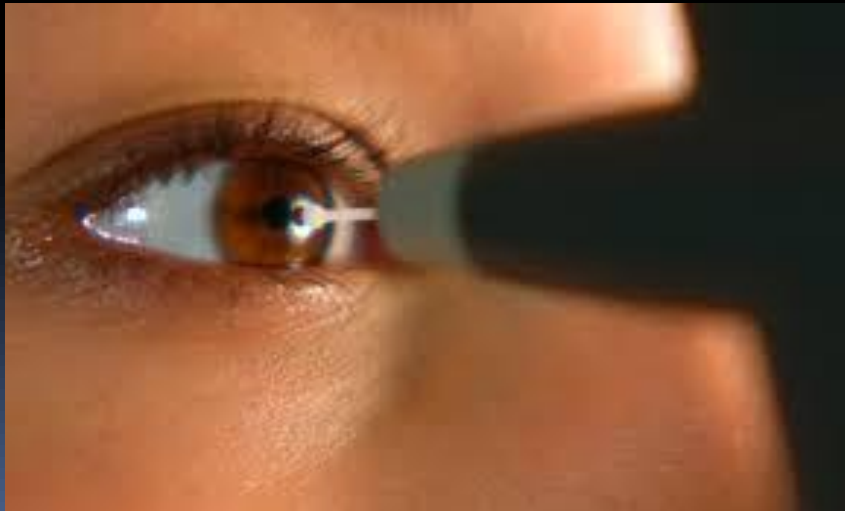
## Perkins Tonometer



## Tono-Pen



# Måling af det intraokulære tryk (tension): icare





# Måling af det intraokulære tryk (tension): icare Pro

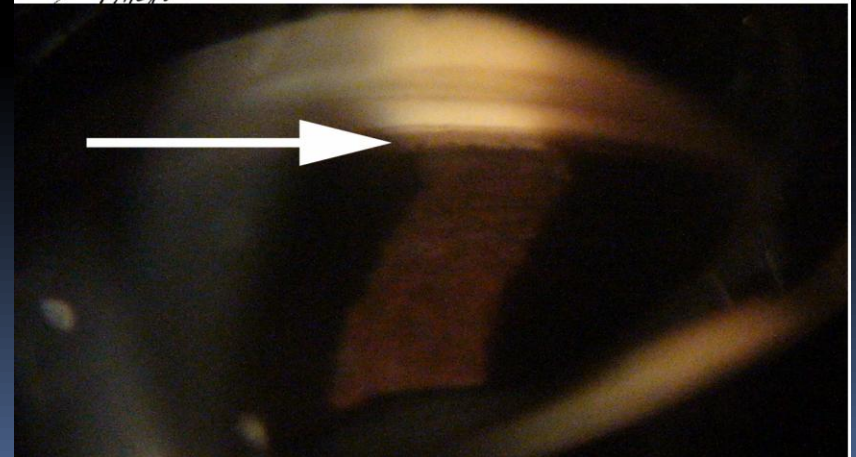
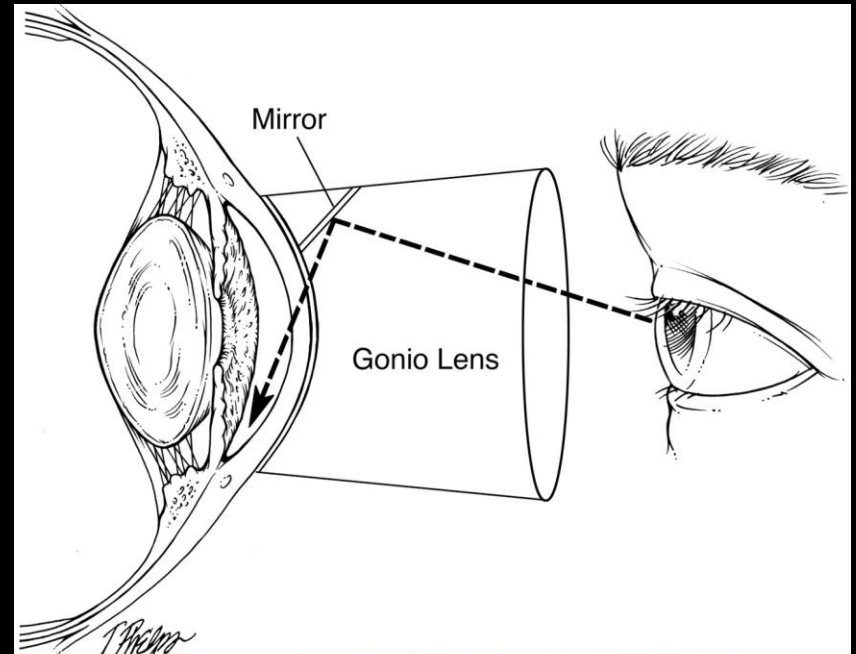
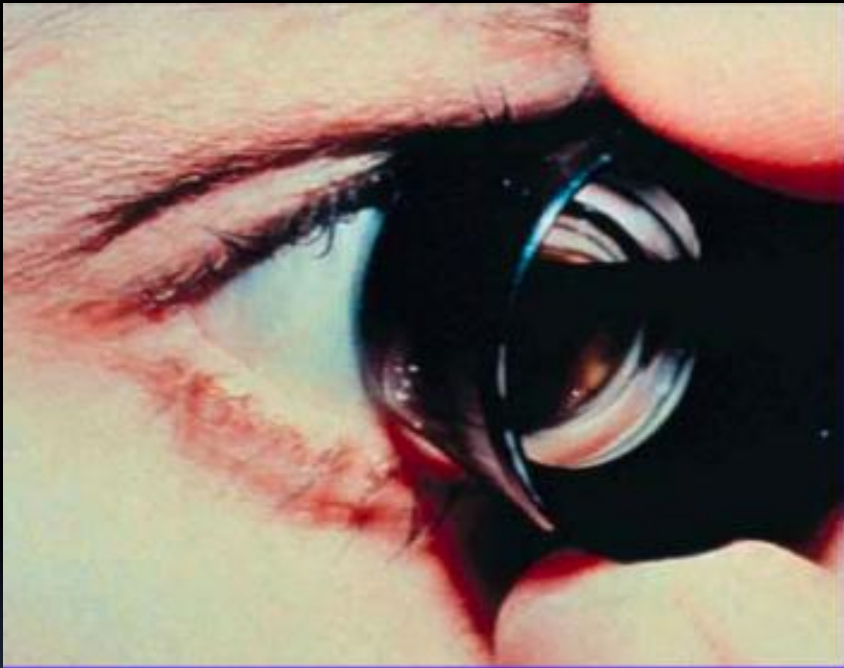


# Måling af central corneatykkelse (CCT): Pachymetri

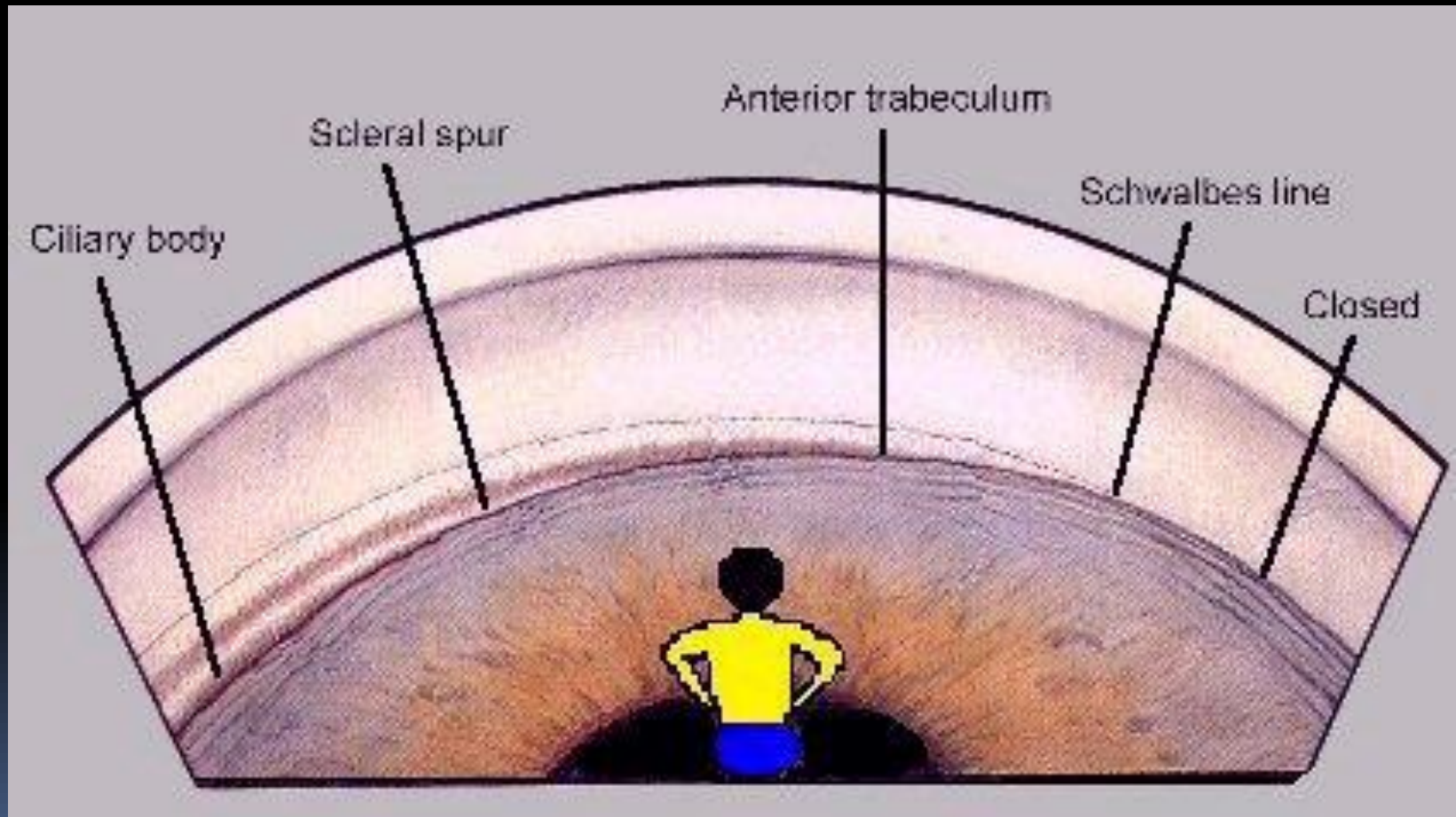


# Gonioskopi

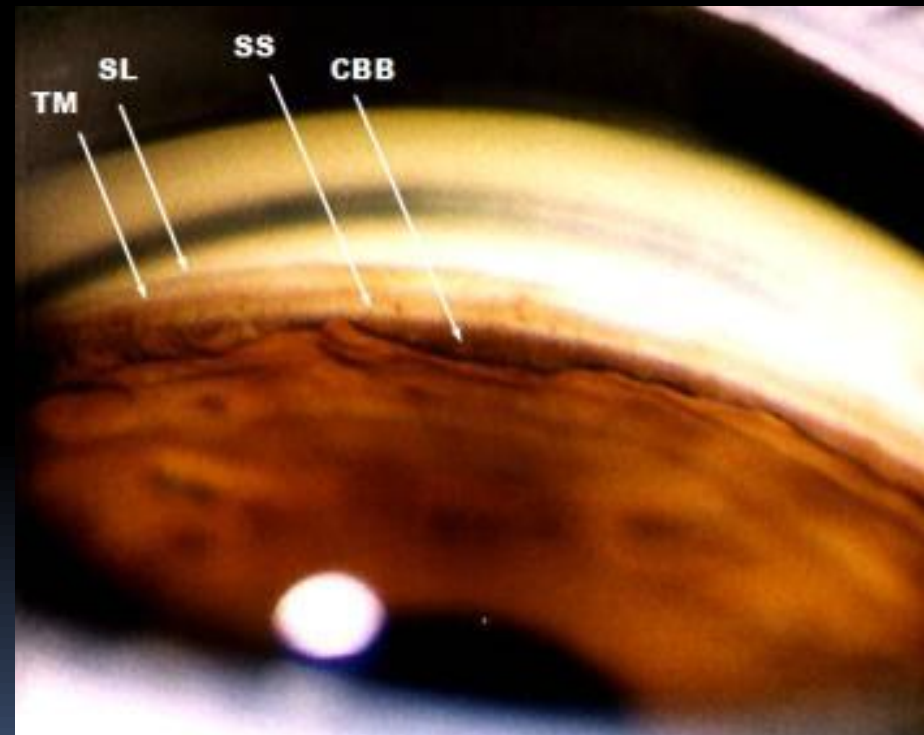
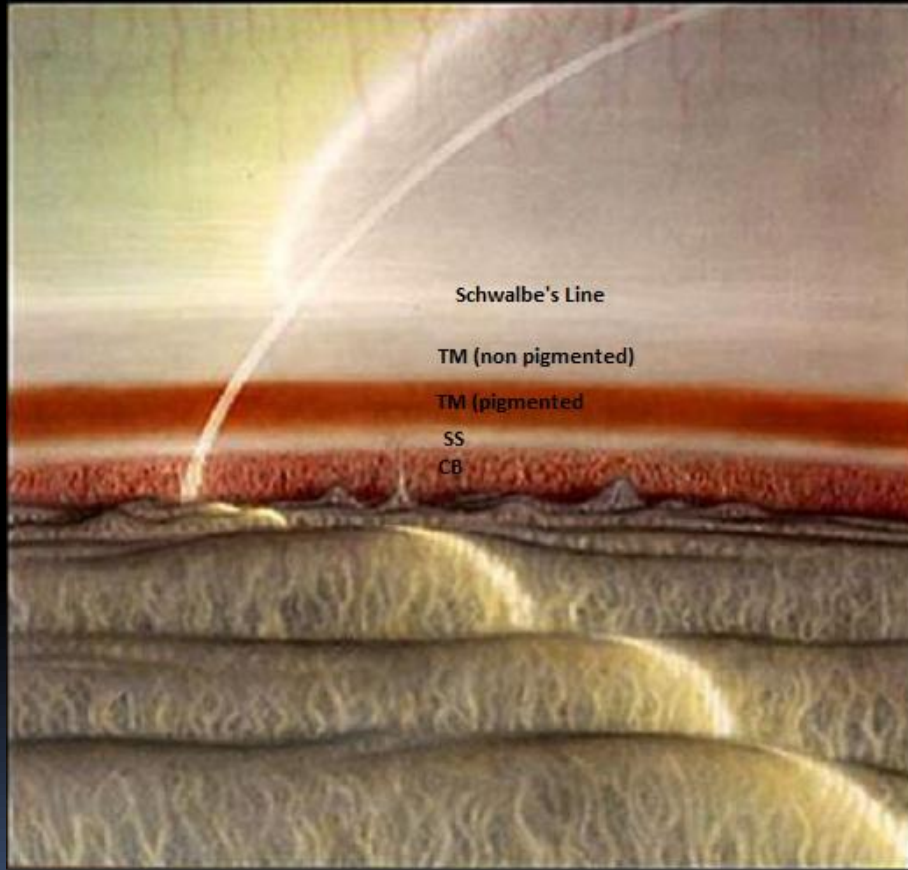
## Undersøgelse af kammervinklen



# Gonioskopi – er kammervinklen åben eller lukket?



# Normal åben kammervinkel



# Lukket kammervinkel



# 1,2 mio retinale ganglionceller (RGC) samles til synsnerven

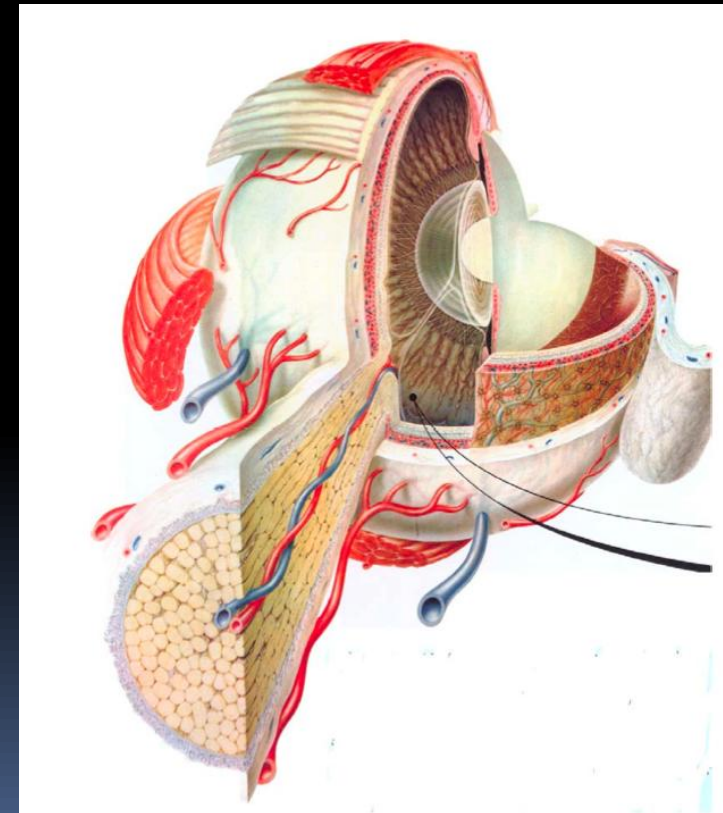
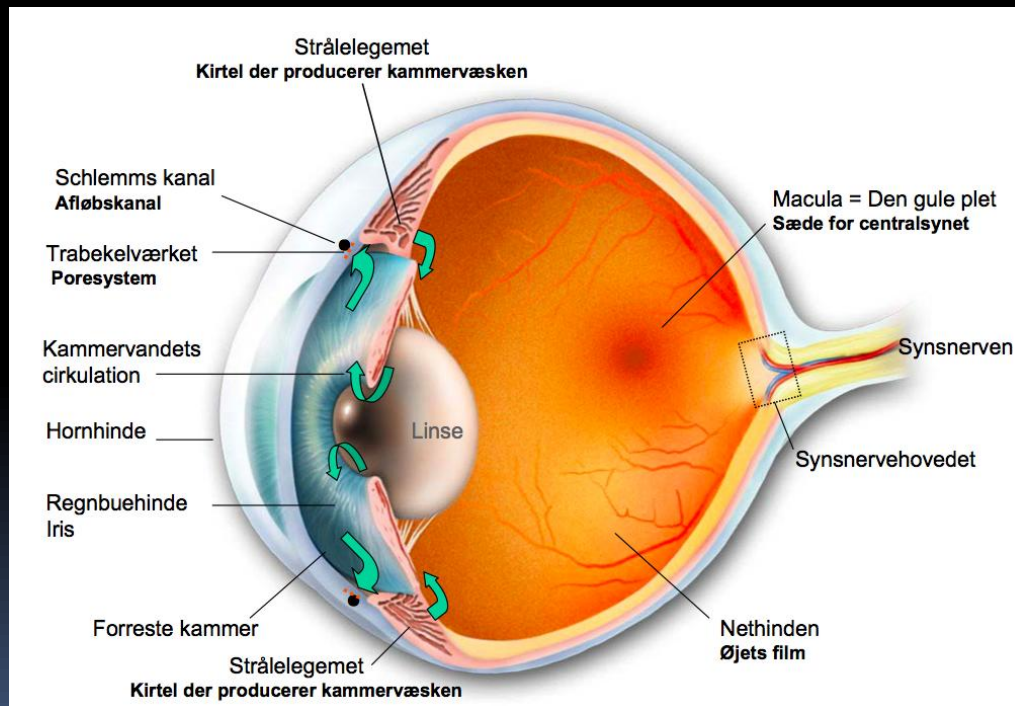
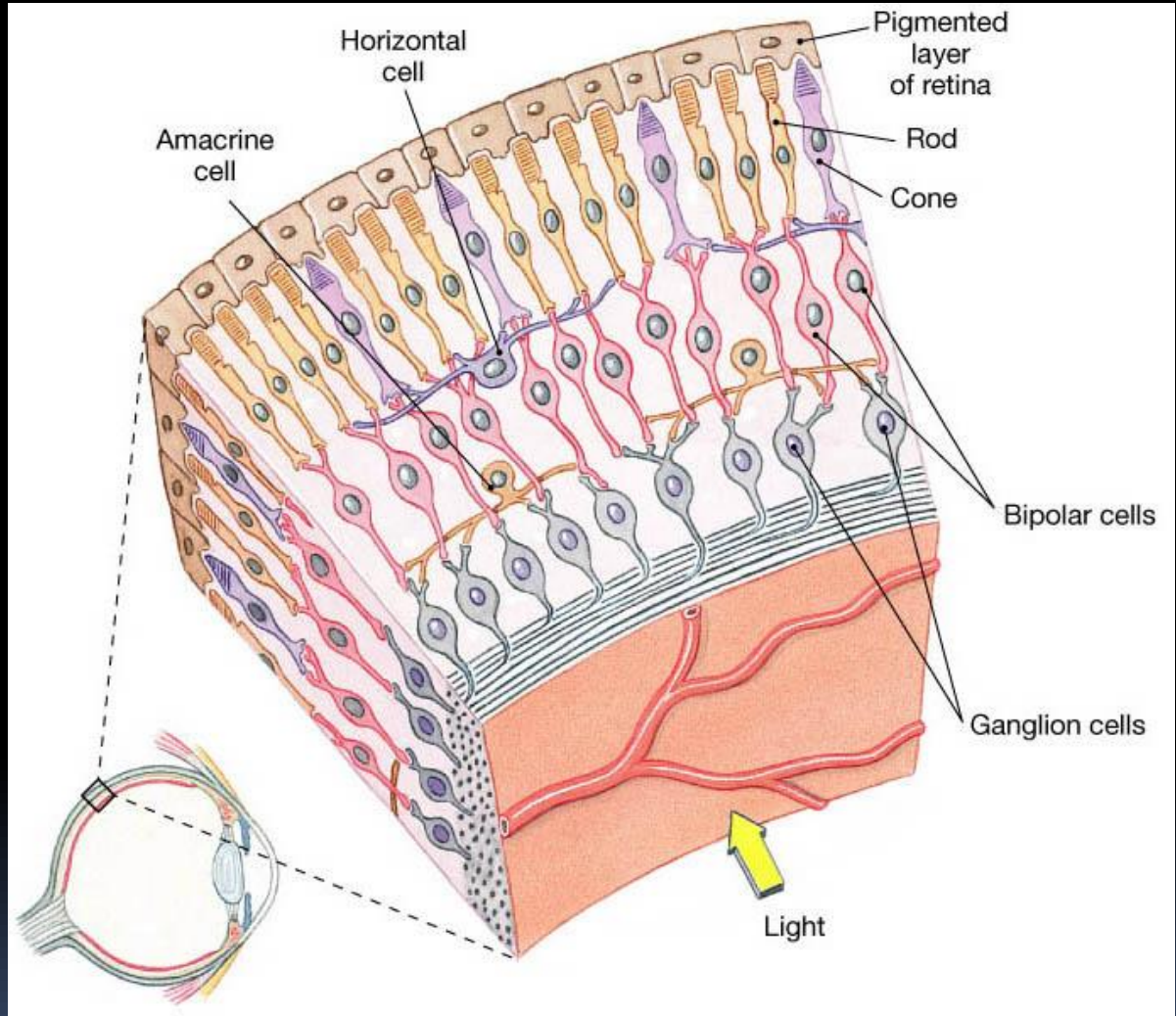
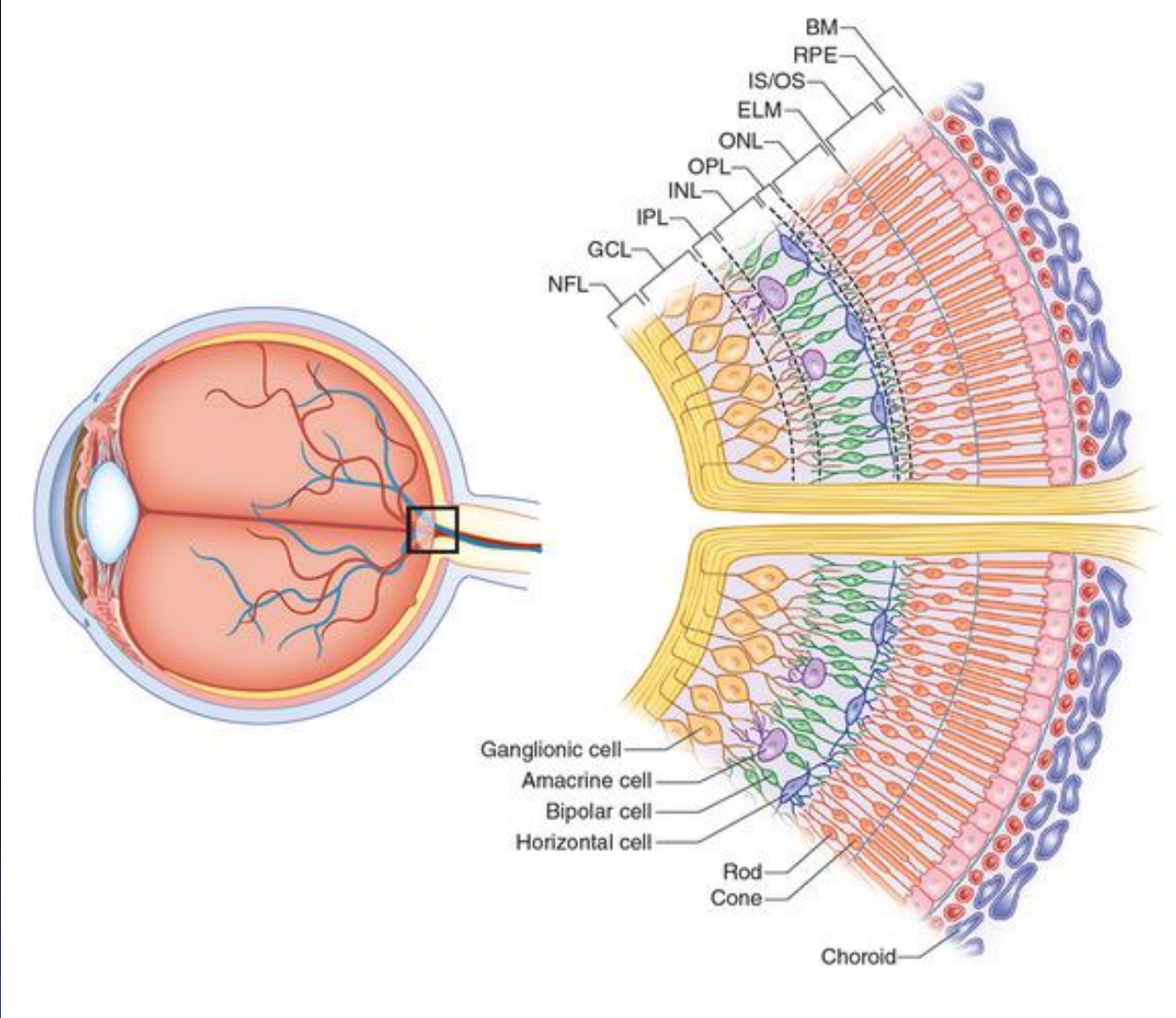


Image courtesy John Thygesen

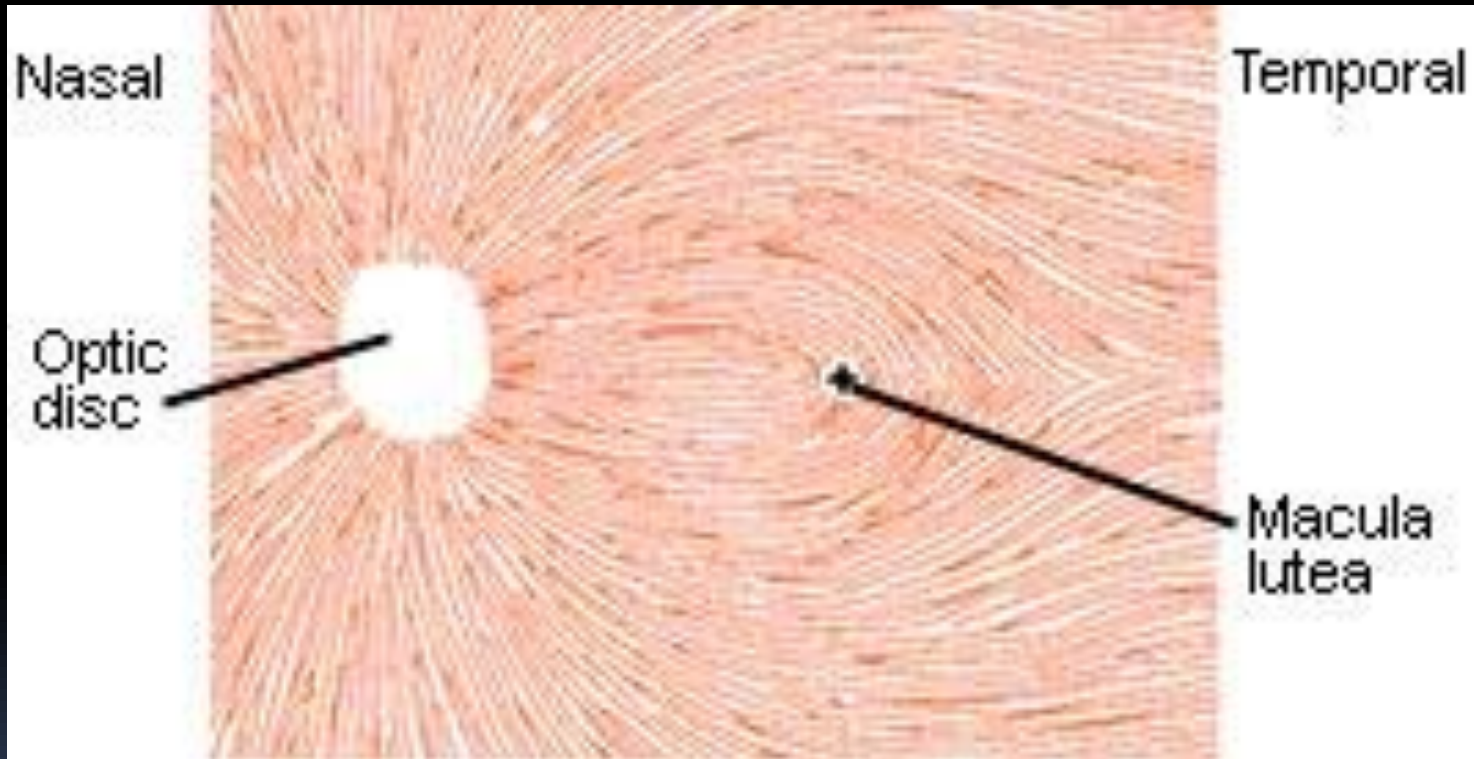
Karen Bjerg Pedersen, afd.læge, PhD, FEBO. Øjenafdelingen Glostrup Hospital



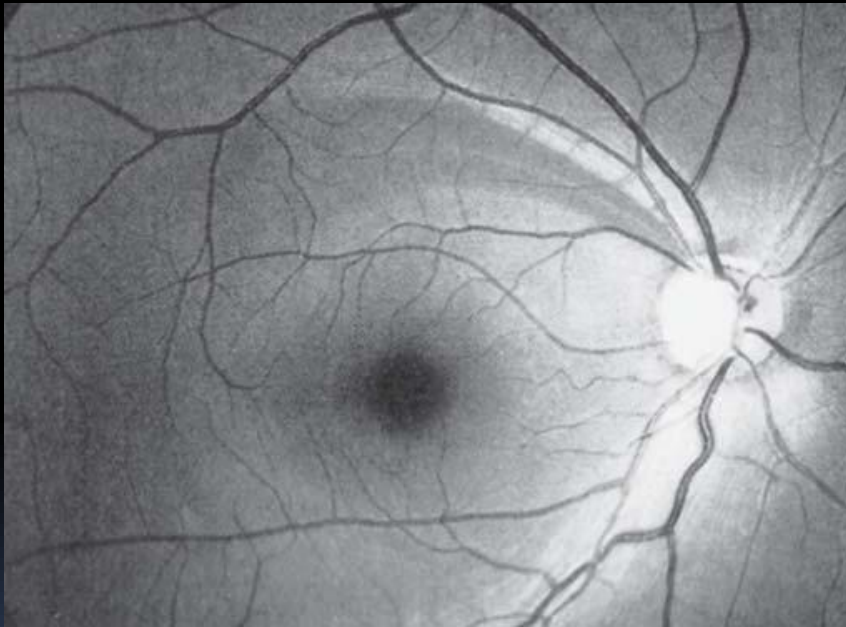




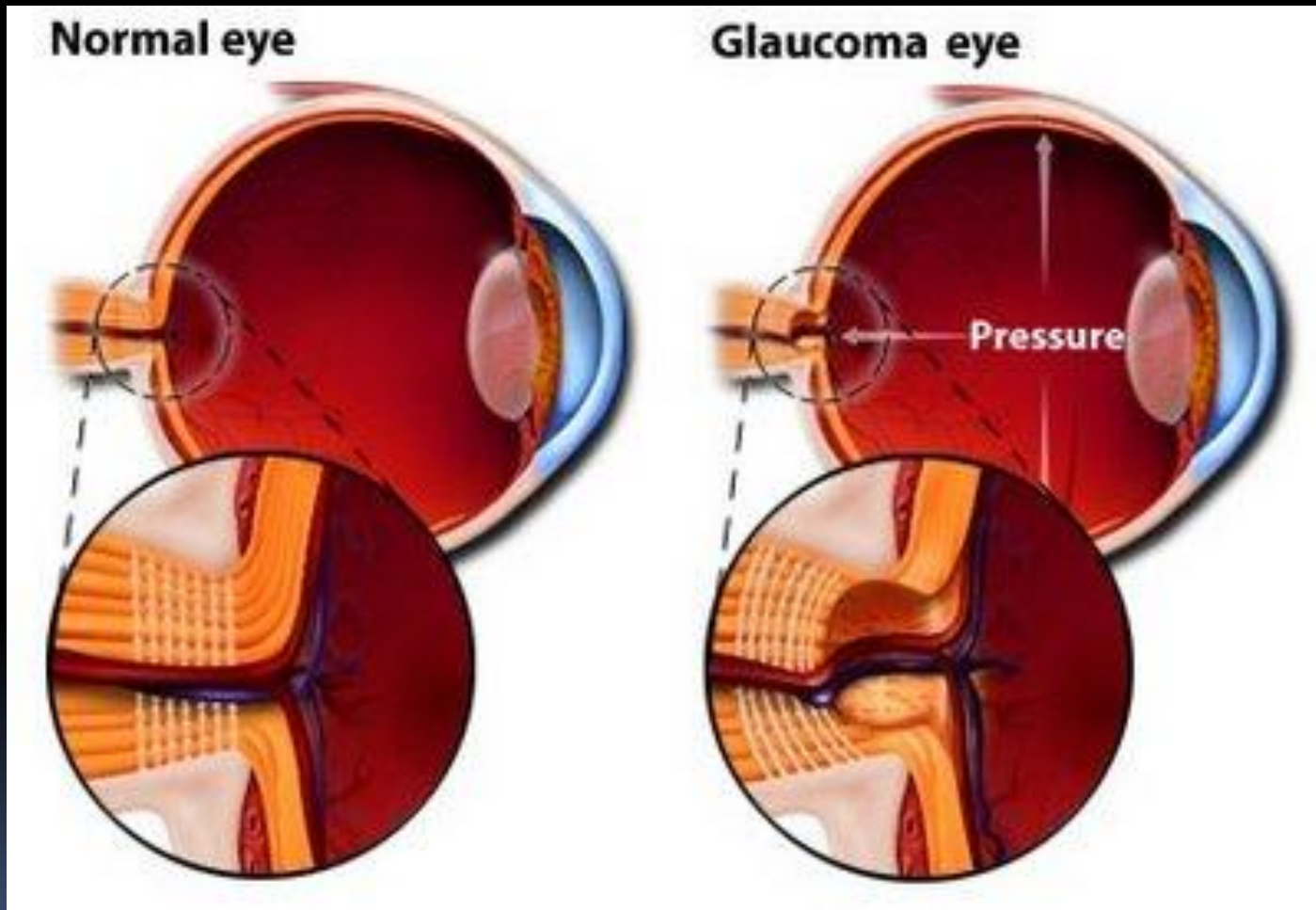
# Retinale nervetrådsfiberlag



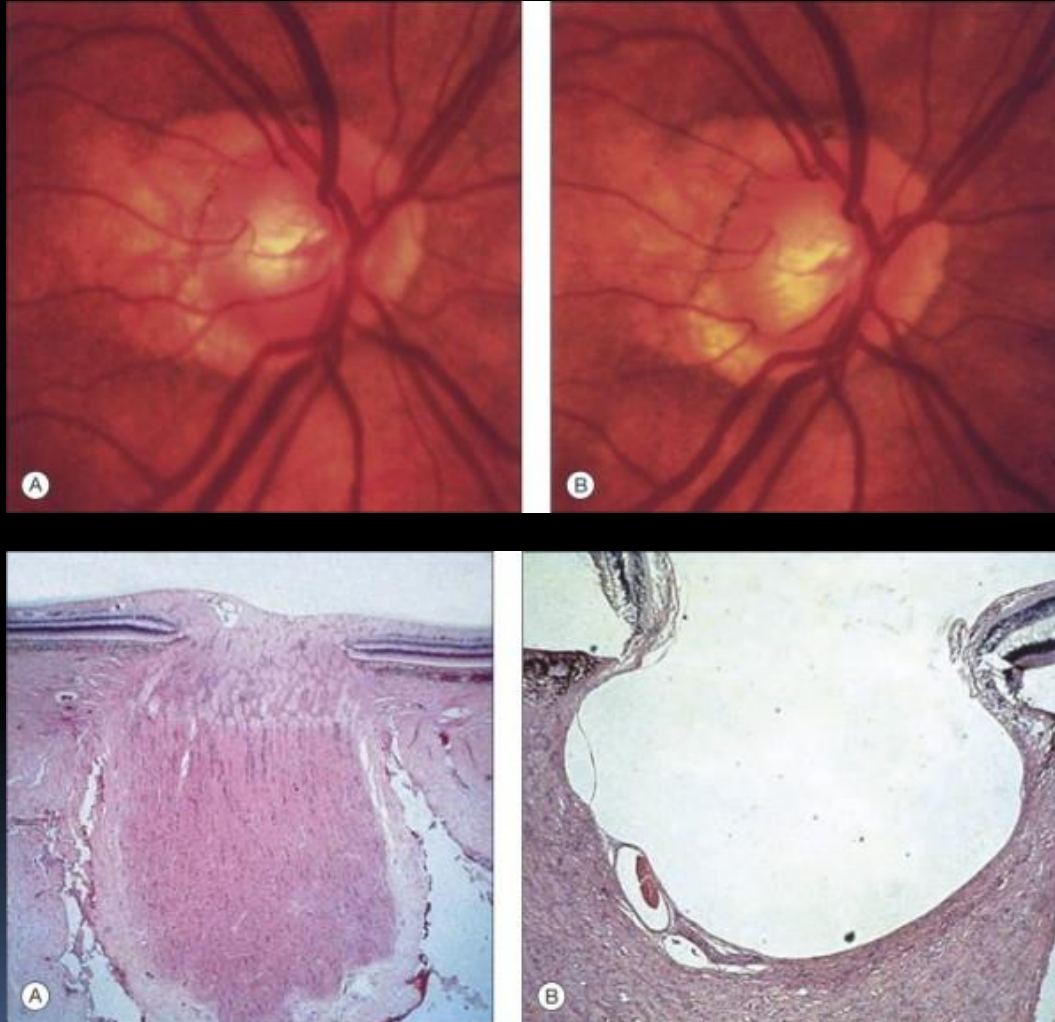
# Papil vurdering: nervetrådsfiberlaget



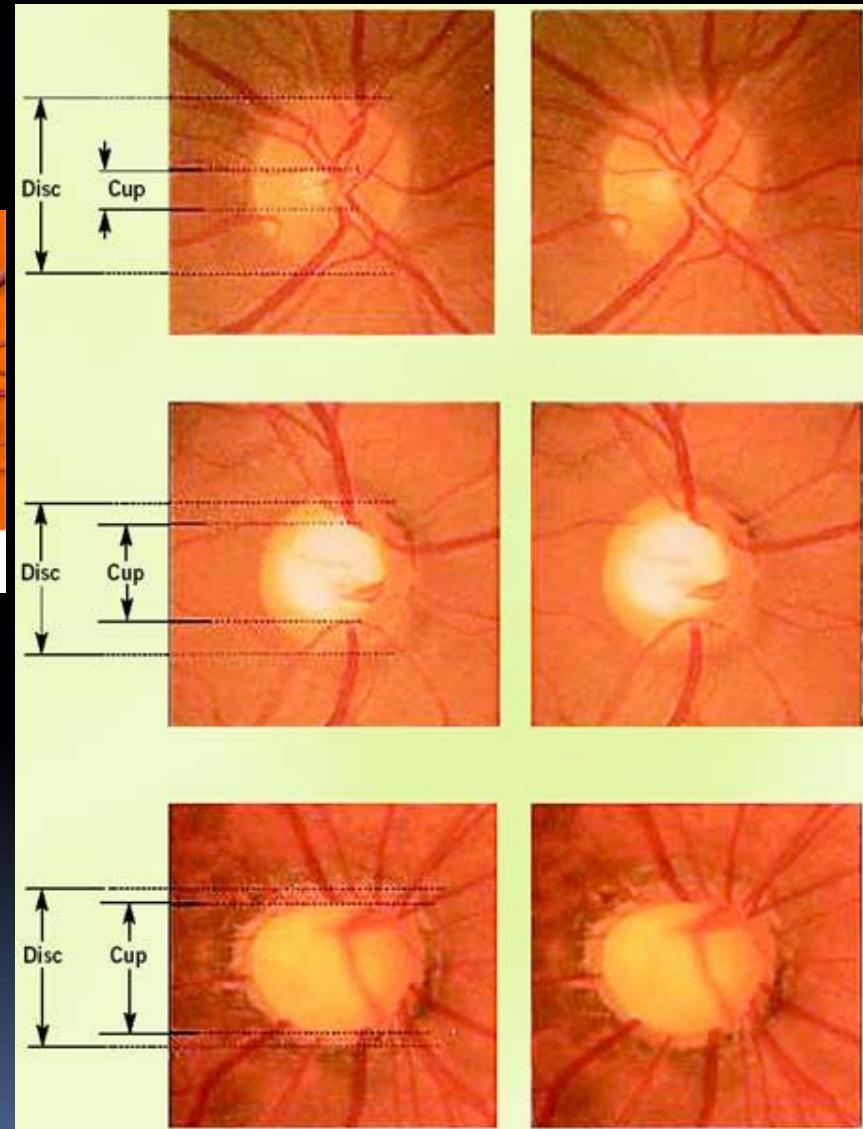
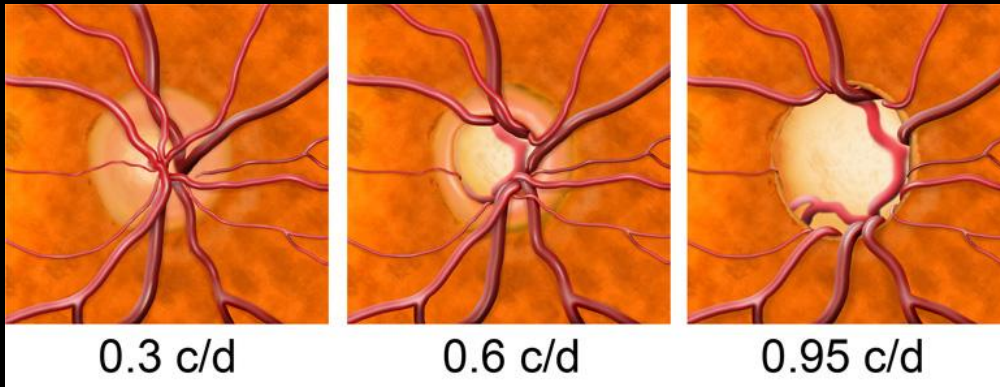
# Forhøjet tryk i øjet -> papil ekskavation



# Synsnervehovedets ekskavation



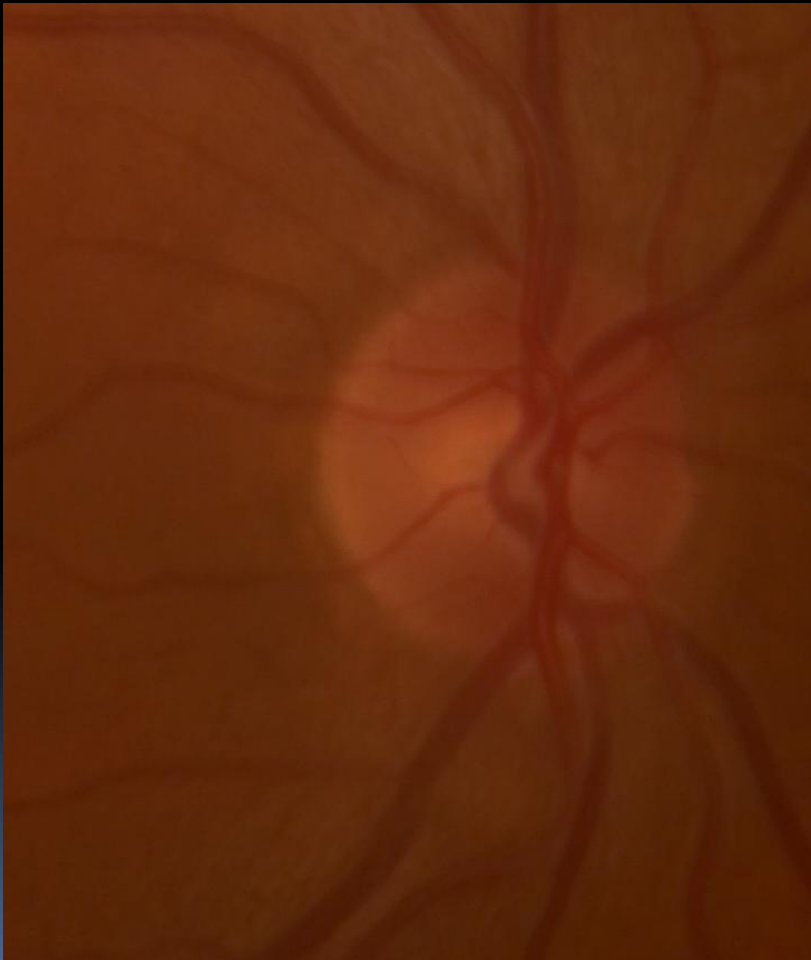
# Cup-Disc Ratio (CD ratio)





# Normal papil

# Glaukom papil



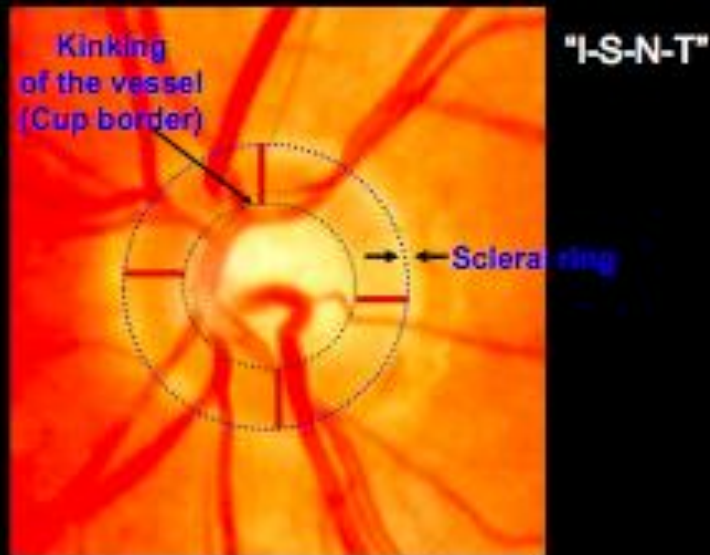


# ISNT reglen

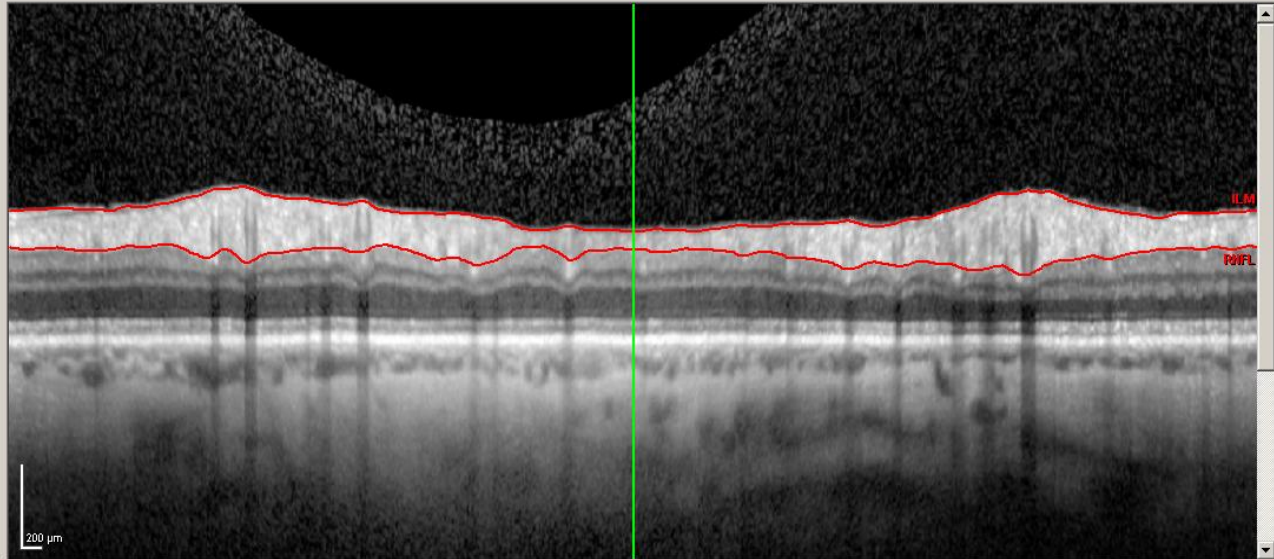
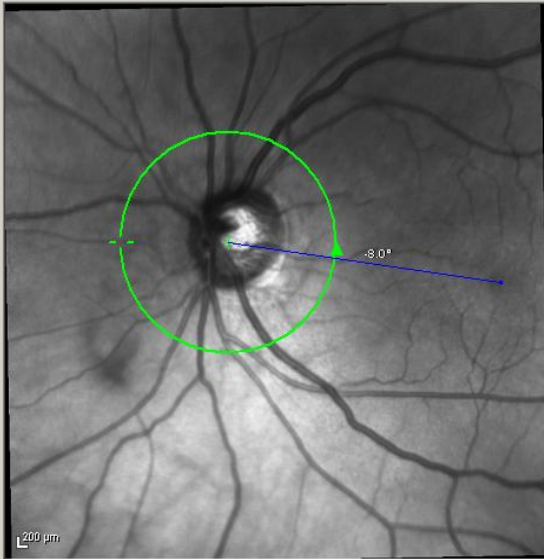
## Inferior-superior-nasal-temporal

ISNT reglen opfyldt

Glaukom

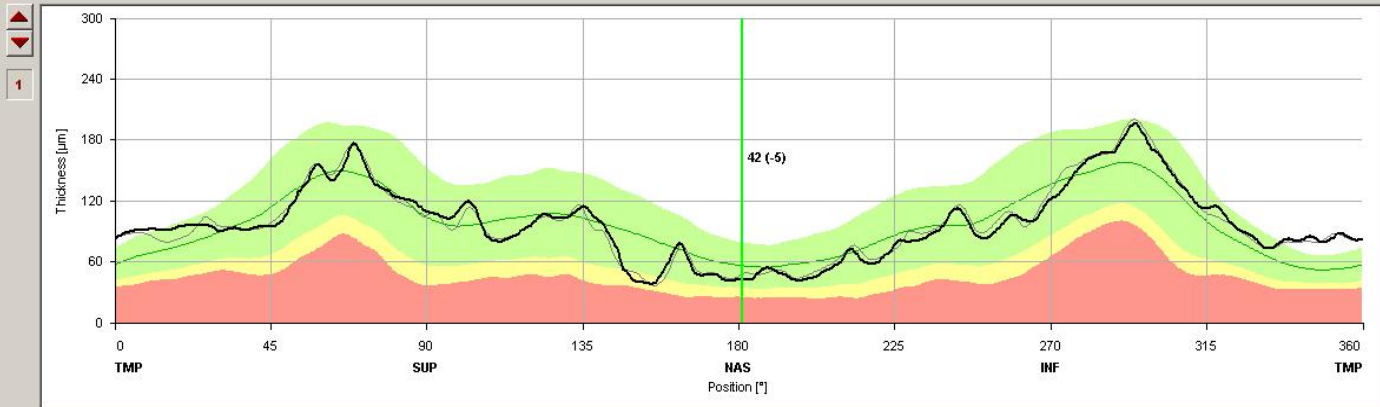
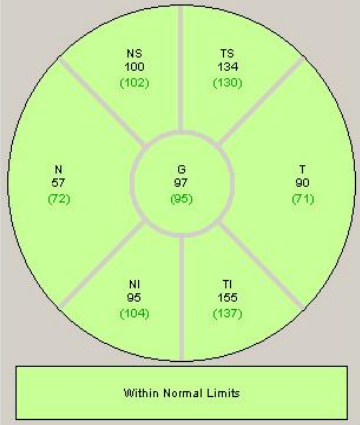


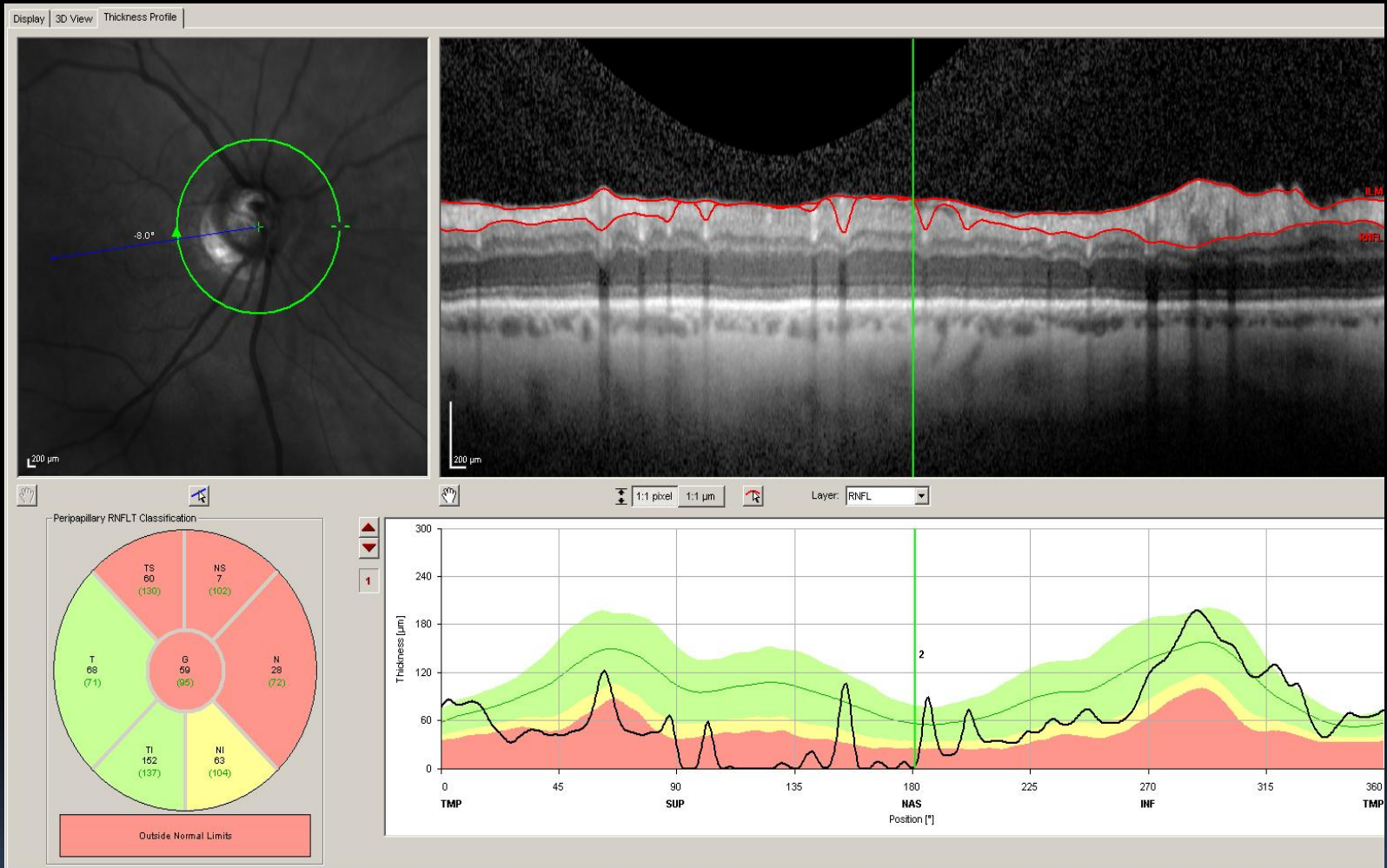




1:1 pixel 1:1 µm Layer: RNFL

Peripapillary RNFLT Classification

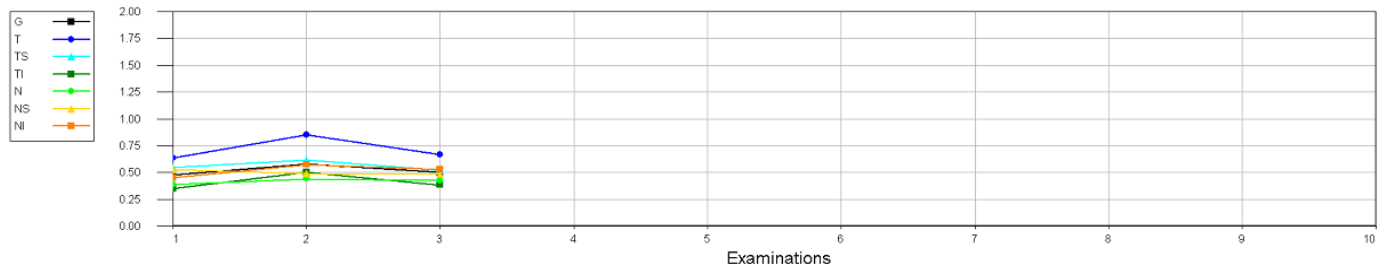




Diagnosis: ---

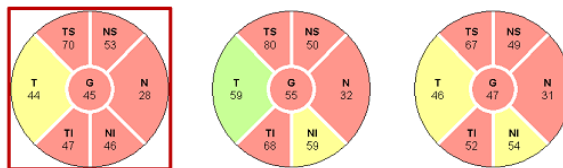
Comment: ---

### Normalized RNFL Thickness

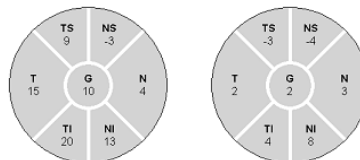


Exam Date                      05-feb-2014                      07-nov-2014                      27-jan-2015

### RNFL Thickness



### Difference to Selected Reference



Notes:

Date: 28-01-2015

Signature: