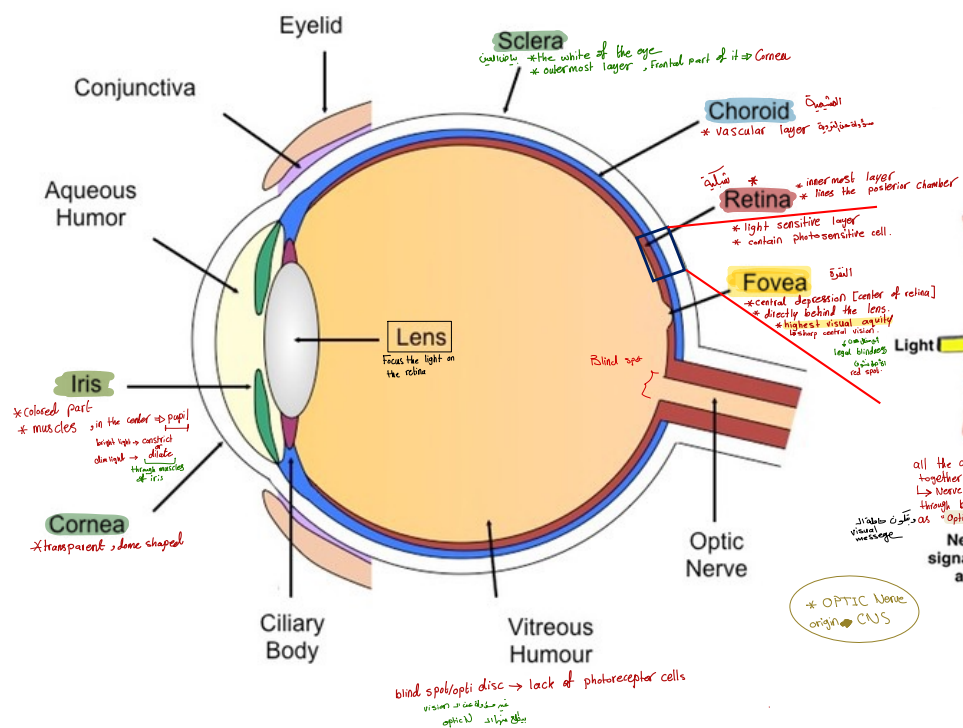
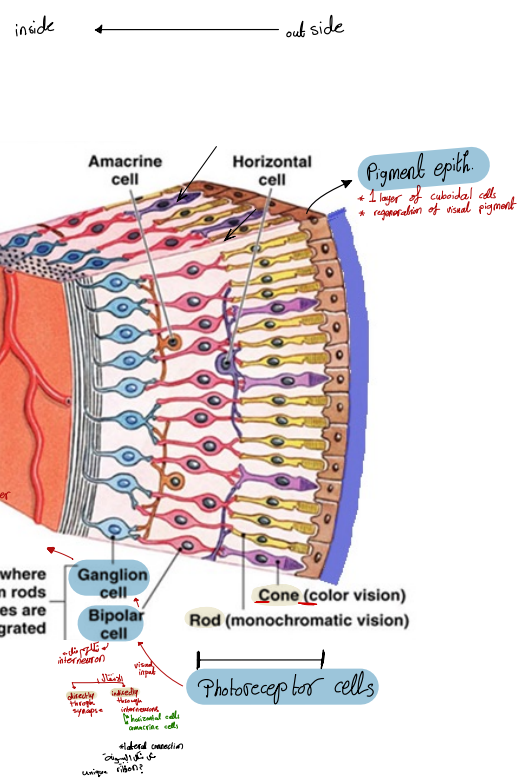


Biochemistry of Vision

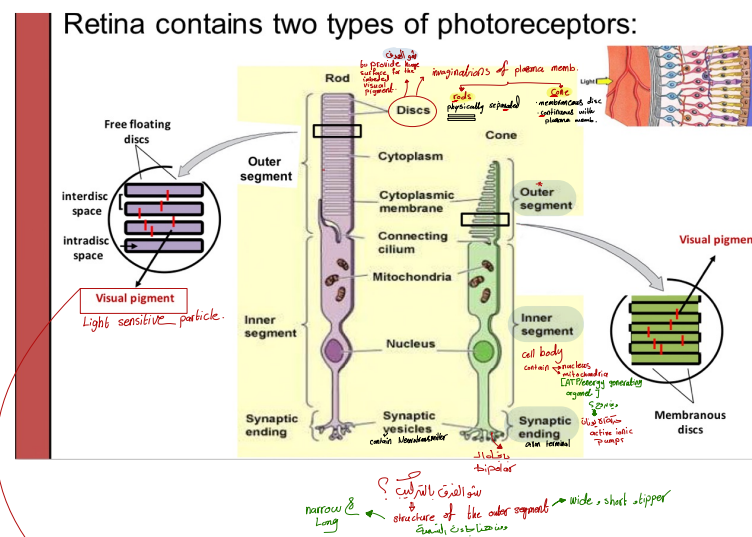
The Structure of Human Eye



The Structure of Retina



Photoreceptor cells

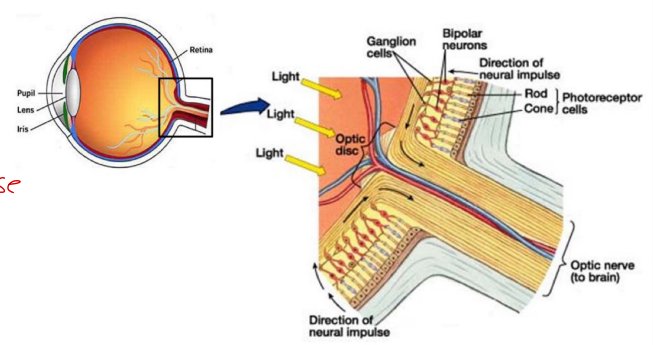


Phototransduction

Phototransduction is the process by which the light detected by photoreceptor cells in the retina is converted into electrical (or cellular) signals.

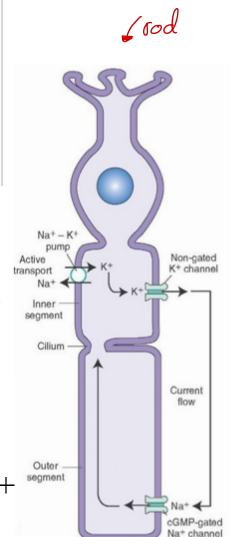
vision process

أحوال المؤثر للصورة
 عن طريق تحويل ال
 stimulus → nerve impulse



Phototransduction Cascade

- In the absence of light, the photoreceptor cell is in the depolarized state with membrane potential of -40 mV. This depends on:
 - Non-gated K⁺ channel: outflux of K⁺ (ongoing outward K⁺ current)
 - cGMP-gated Na⁺ channel: influx of Na⁺ (inward Na⁺ current known as dark current)
 - Na⁺-K⁺ pump: it is an active transport requires ATP (to transfer 3 Na⁺ out and 2 K⁺ in)

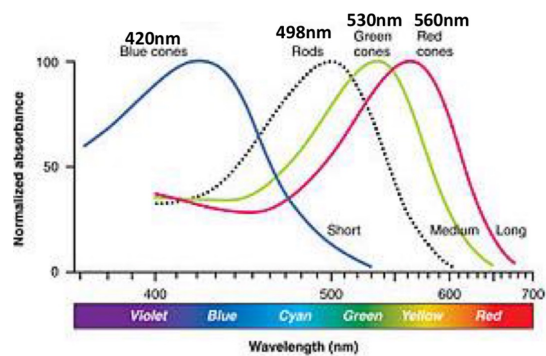


Iodopsin

visual pigment of the cones
 إيسنلوفين
 Iodopsin

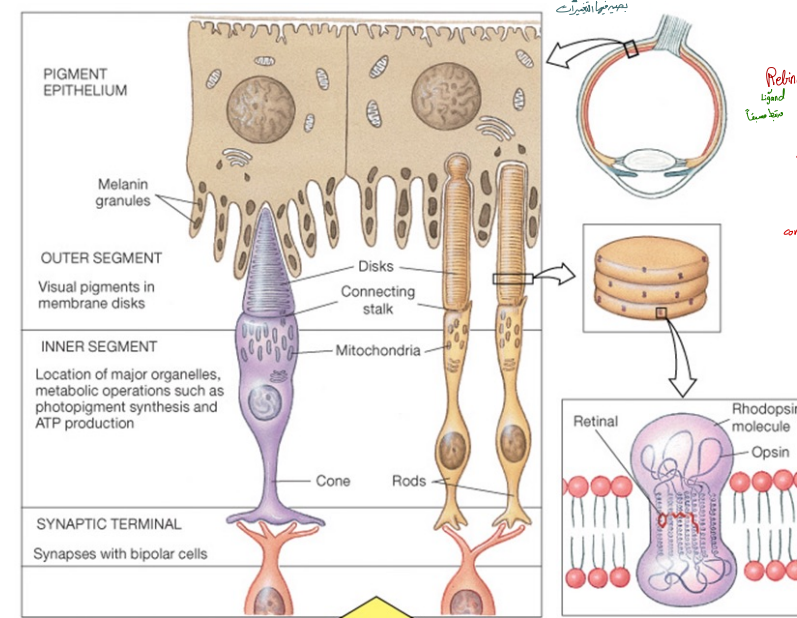
3 types of cone cells → give us color vision

- L cones (photopsin I + retinal) red light, 560nm
- M cones (photopsin II + retinal) green light, 530nm
- S cones (photopsin III + retinal) blue light, 420nm

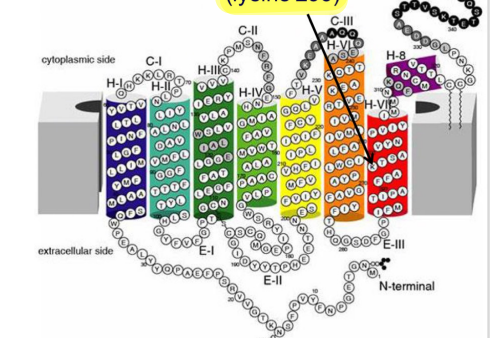


Visual Pigment

protein part → opsin
 non-protein part → Retinal = aldehyde form of Vit. A
 light sensitive particle
 ↓ Vit. A → night blindness



Retinal attachment site (lysine 296)



Vit. A conjugated system

