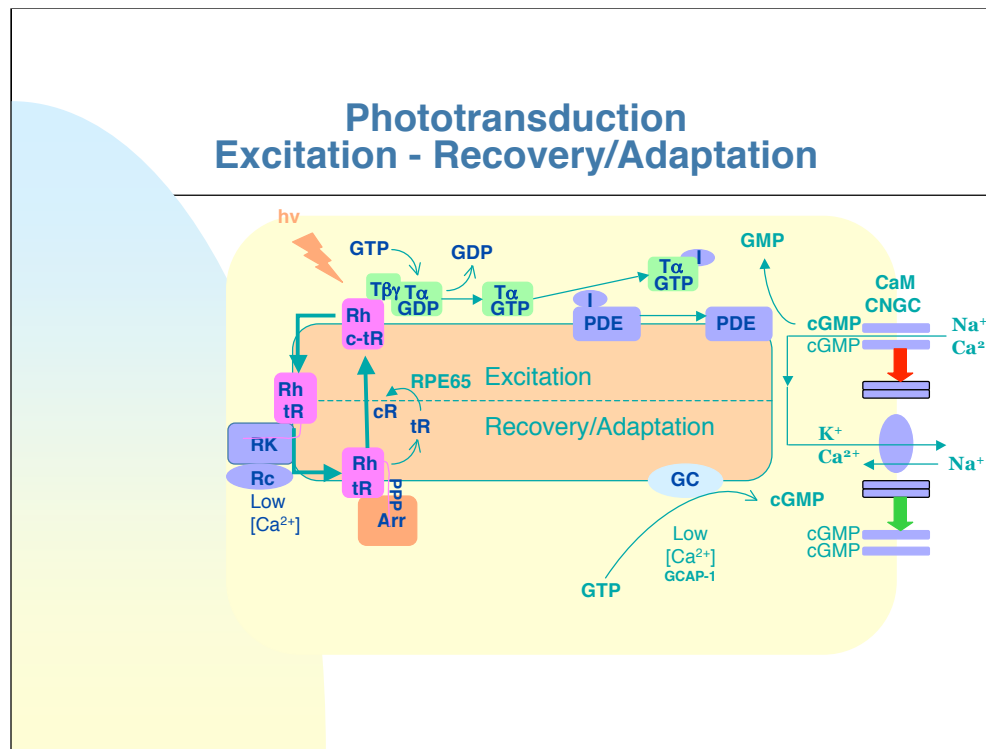


$h\nu$: photon

RPE: retinal pigment epithelium, Fe-dependent microsomal isomerohydrolase

The long lived metarhodopsin II allows for activation of many molecules of transducin.

Retinal is derived from vitamin A (β -carotene).



$h\nu$: photon

c-tR: *cis* to *trans* retinal

GTP: guanosine triphosphate

I: inhibitor; γ -subunit of PDE

GMP: guanosine monophosphate

CNGC: cyclic nucleotide-gated channel

RK: rhodopsin kinase (inhibited by Ca²⁺-recoverin)

Arr: arrestin

RPE65: retinal pigment epithelium, Fe-dependent microsomal isomerohydrolase

GCAP: guanylyl cyclase activating protein, Ca²⁺/Mg²⁺ sensor; active at low [Ca²⁺]

Recent studies suggest that Ca²⁺-Rc sits between Rh and RK in the inhibited complex; at low Ca²⁺, Rh and RK can interact.

Rods have low-light sensitivity; cones have color discrimination.

Glutamate is neurotransmitter released as a result of rod outer segment hyperpolarization.

Rh: rhodopsin

T: transducin, G protein

GDP: guanosine diphosphate

PDE: phosphodiesterase

cGMP: cyclic guanosine monophosphate

CaM: calmodulin (inhibits CNGC)

Rc: recoverin (Ca²⁺-binding protein)

GC: guanylyl cyclase

Review Questions

- Which ions and ion channels are used for phototransduction?
- Which signal transduction pathway is used for phototransduction (enzymes, second messenger, receptor)?
- How does phototransduction compare with gustation and olfaction?