

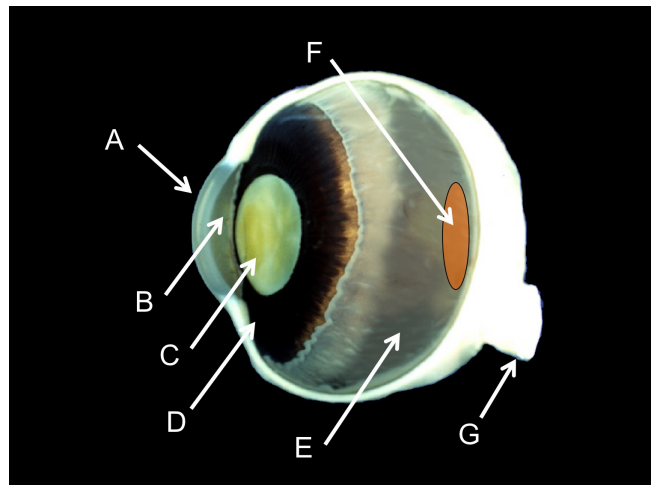
Self-Assessment

Anatomy and Physiology of the Retina

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1) Name the structures labeled in the image below.

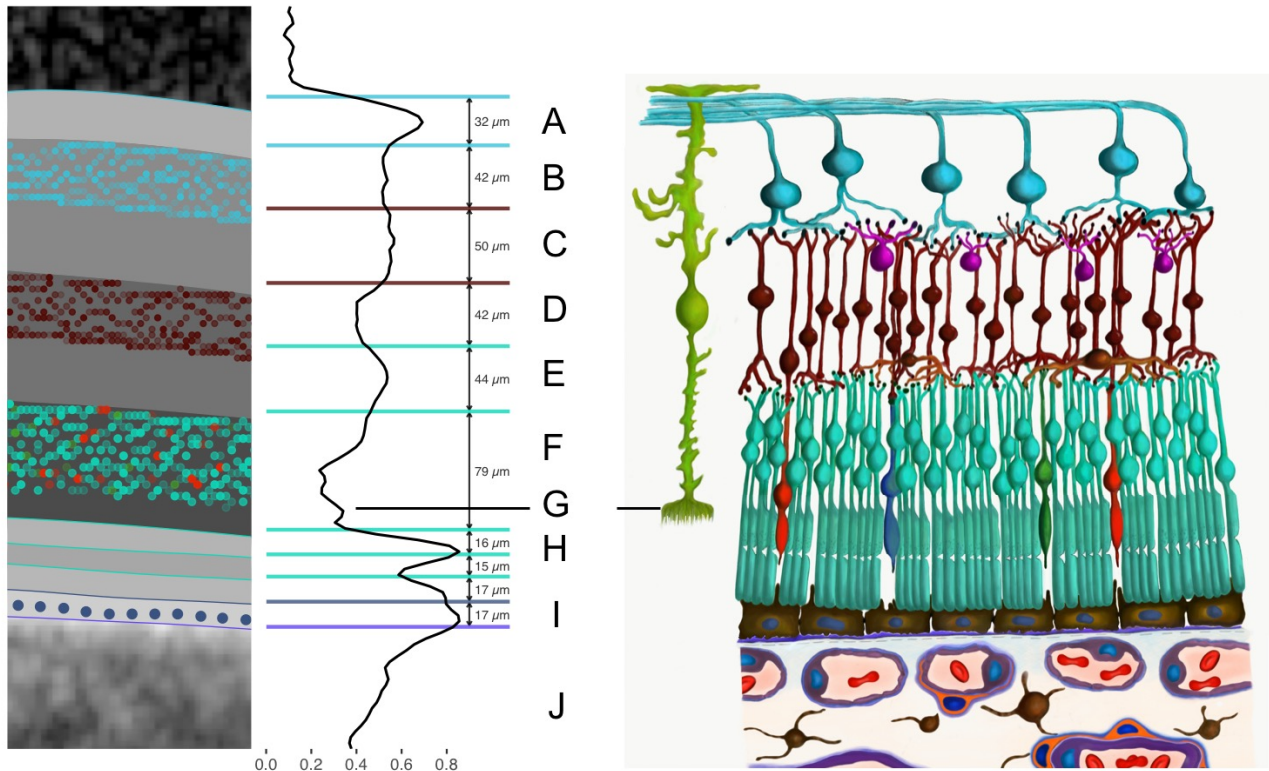
- A _____
- B _____
- C _____
- D _____
- E _____
- F _____
- G _____



2) The _____ provides about _____% of the converging power needed to focus images on the back of the eye. The remaining _____% of the focusing power comes from the _____, which actually becomes thicker when a person looks a near objects due to contraction of the _____.

3) Name the structures labeled in the image on the following page.

- | | |
|---------|---------|
| A _____ | F _____ |
| B _____ | G _____ |
| C _____ | H _____ |
| D _____ | I _____ |
| E _____ | J _____ |



4) There are _____ times more rod photoreceptors than cones in the human retina, and _____ are the least numerous of all.

5) The lowest ratio of photoreceptors to ganglion cells occurs in the fovea – approximately _____ to one -- which enables the very high acuity vision associated with this region. In the periphery, a single ganglion cell can receive input from more than _____ photoreceptors.

6) Place the following six anatomical zones in order of decreasing diameter and write the largest diameter in mm of each zone beside its name: Fovea, Parafovea, Perifovea, Foveola, Umbo, Foveal Avascular Zone.

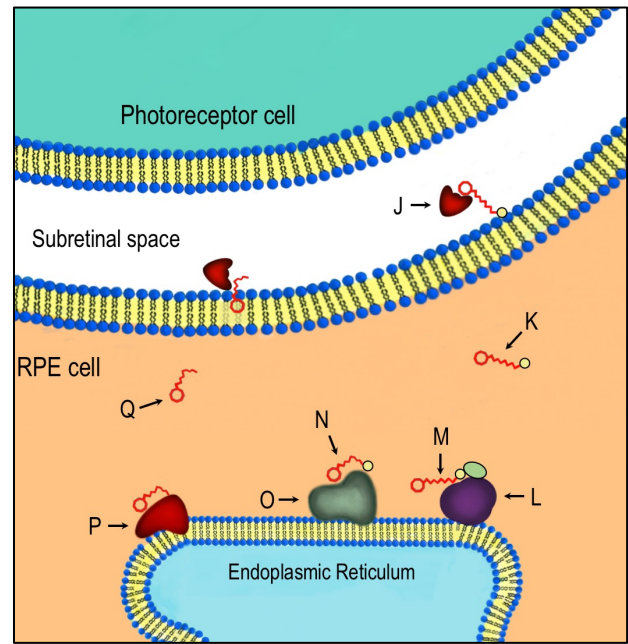
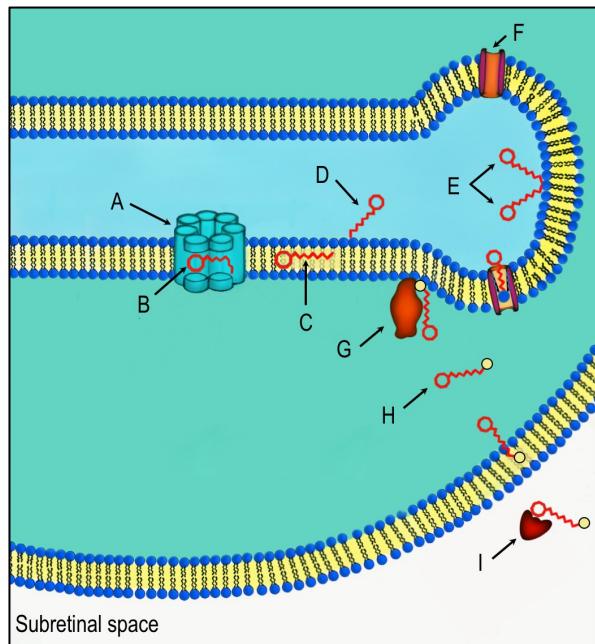
A _____	D _____
B _____	E _____
C _____	F _____

7) Complete the following table indicating the neurotransmitter and type of output (graded or action potential) for each type of neuron.

Cell Type	Neurotransmitter	Output
Ganglion Cell	_____	_____
Bipolar Cell	_____	_____
Photoreceptor	_____	_____

8) Rhodopsin belongs to a family of receptors known as _____.
 _____. The first two words of this receptor family's
 name refer to what protein in rhodopsin's case? _____
 The residue of rhodopsin that covalently binds 11-cis retinal is
 _____.

9) In the normal retina, ABCA4 flips _____
 to the cytoplasmic leaflet of the disk membrane. In Stargardt disease, the
 impairment of ABCA4 function causes _____
 to accumulate on the inner leaflet of the disk. This material also accumulates
 within and beneath the retinal pigment epithelium in the form of the
 ophthalmoscopically visible _____ that are
 characteristic of Stargardt disease.



10) The process depicted in the two images above is known as _____ and takes place on a time scale of _____.

Name all the lettered molecules in these two images.

A _____

F _____

B _____

G _____

C _____

H _____

D _____

I _____

E _____

J _____

K _____

O _____

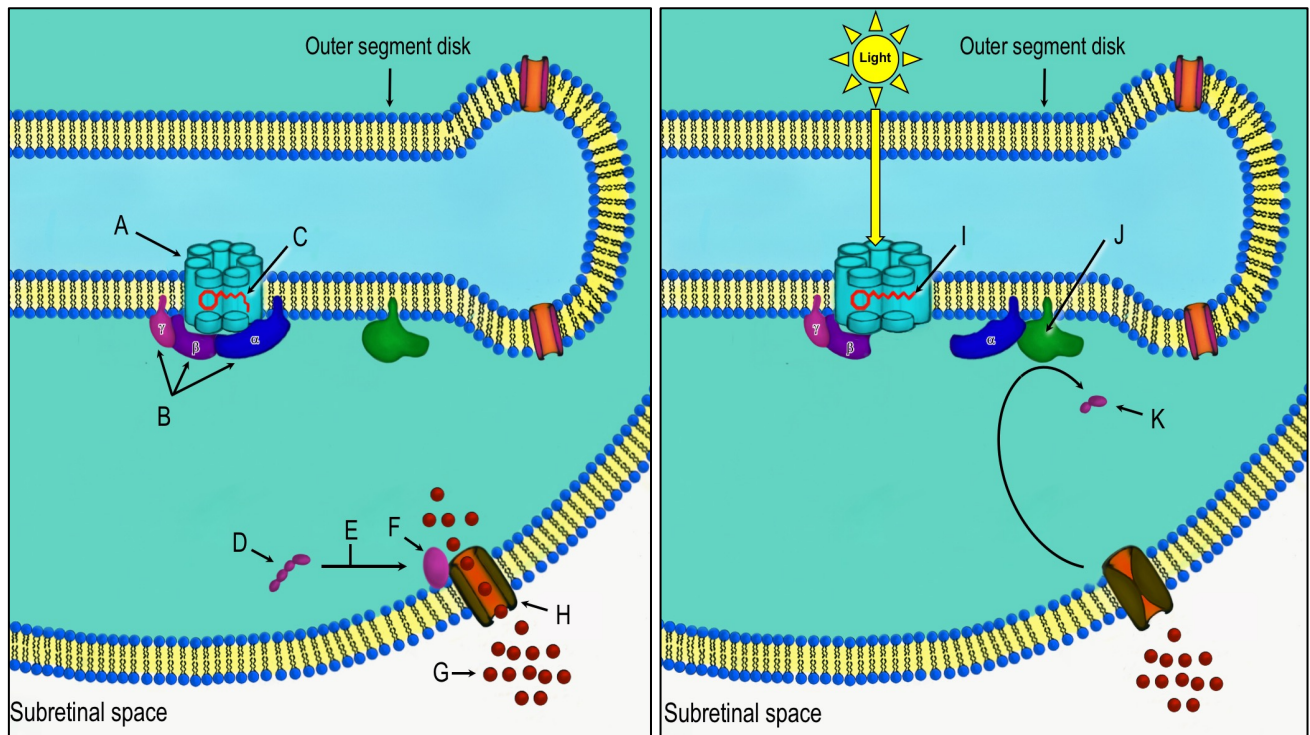
L _____

P _____

M _____

Q _____

N _____



11) The process depicted in the two images above is known as _____ and takes place on a time scale of _____.

Name all the lettered molecules in these two images.

A _____	G _____
B _____	H _____
C _____	I _____
D _____	J _____
E _____	K _____
F _____	