



Special Senses

- Did you submit the pre-lab on Canvas?
- Complete the lab activities and get an exit ticket for today
- Don't forget to take the terminology quiz and submit the post-lab before lab next week

Special Senses

- Part I: Eye Anatomy and Physiology
 - Case Study: “The Painful Eye Puff” **(in pairs)**
 - Activity 1: The Structure and Function of the Eye **(in pairs)**
 - Activity 2: Dissection of a Mammalian Cow Eye **(as a table)**
 - Activity 3: Vision Tests **(in pairs)**
- Part II: Ear Anatomy and Physiology
 - Case Study: “To Hear or Not to Hear” **(in pairs)**
 - Activity 4: The Anatomy and Physiology of the Ear **(in pairs)**
 - Activity 5: Hearing Tests **(in pairs)**
 - Activity 6: Romberg Test **(in pairs)**
- Putting it all Together

Case Study: The Painful Eye Puff

Case Study: “The Painful Eye Puff”

Emran hasn't been to the eye doctor in some time, but has noticed that now, at age 54, he can't read the back of the medication bottle dosage instructions unless he finds bright light and a magnifying glass. He goes to get his eyes checked to see if he would benefit from glasses. At the eye doctor's office, the nurse on duty asks Emran to place his chin in a tray and stare straight ahead. She moves a small machine close to his left eye and administers an unexpected puff of air into Emran's eye. She does the same on the right side. Emran yelps in pain. “Oh, that's painful?” asks the nurse. “I'll ask the doctor to talk with you about that further”. She guides Emran to the examination room where Emran sits quietly, mulling over what might be going on. Why would his right eye hurt with a harmless puff of air? When Dr. Reddy arrives, she explains that first she will test his vision using the Snellen test and then she will administer atropine, a muscarinic receptor blocker, to cause pupil dilation so she can look into the back of the eye. “What about that puff test?” asks Emran. “Yes, we will discuss that, too,” replies the doctor, “I think we need more tests.”

The Structure and Function of the Eye

Label the model of the eye and get your instructor's signature.

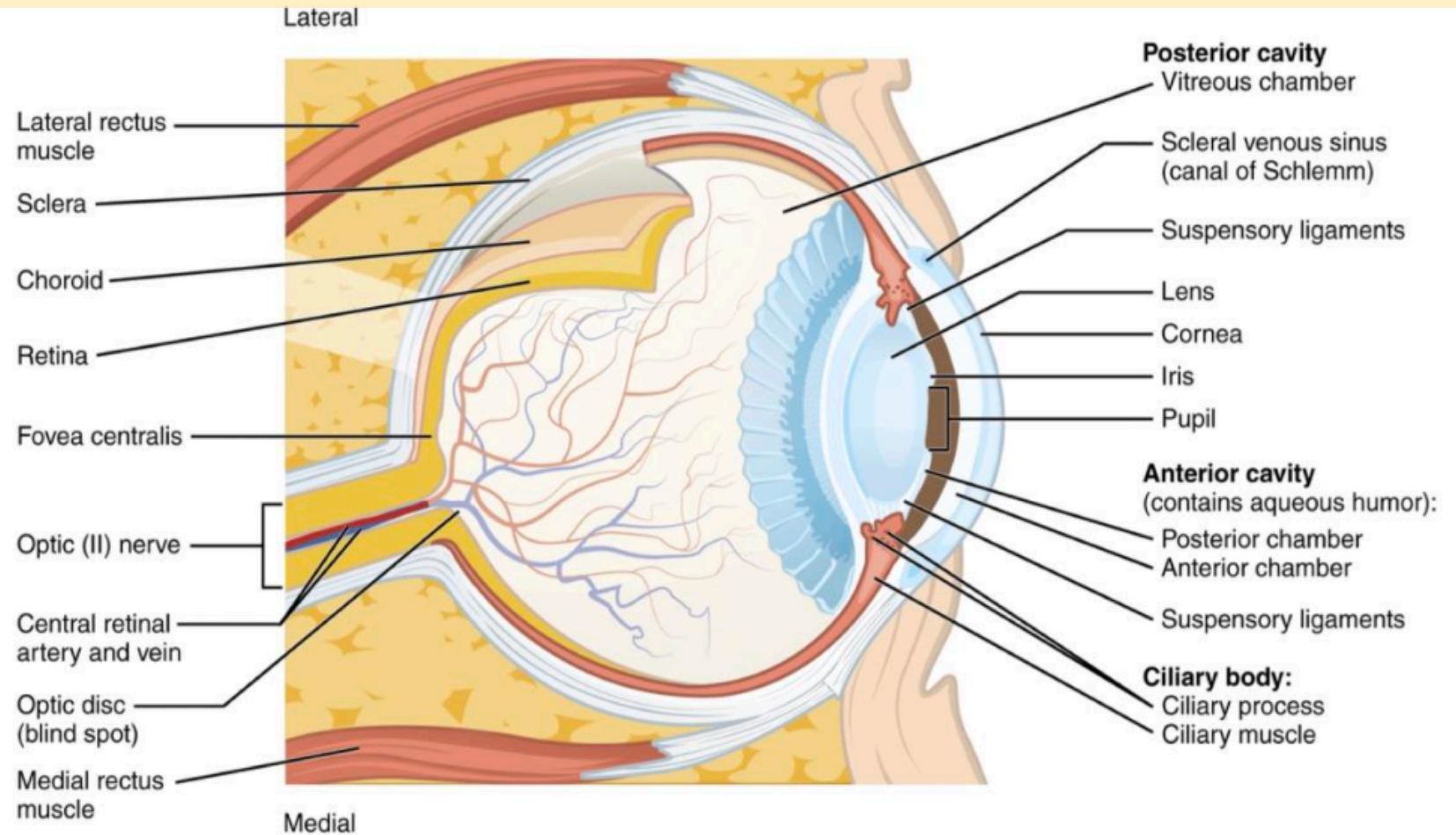
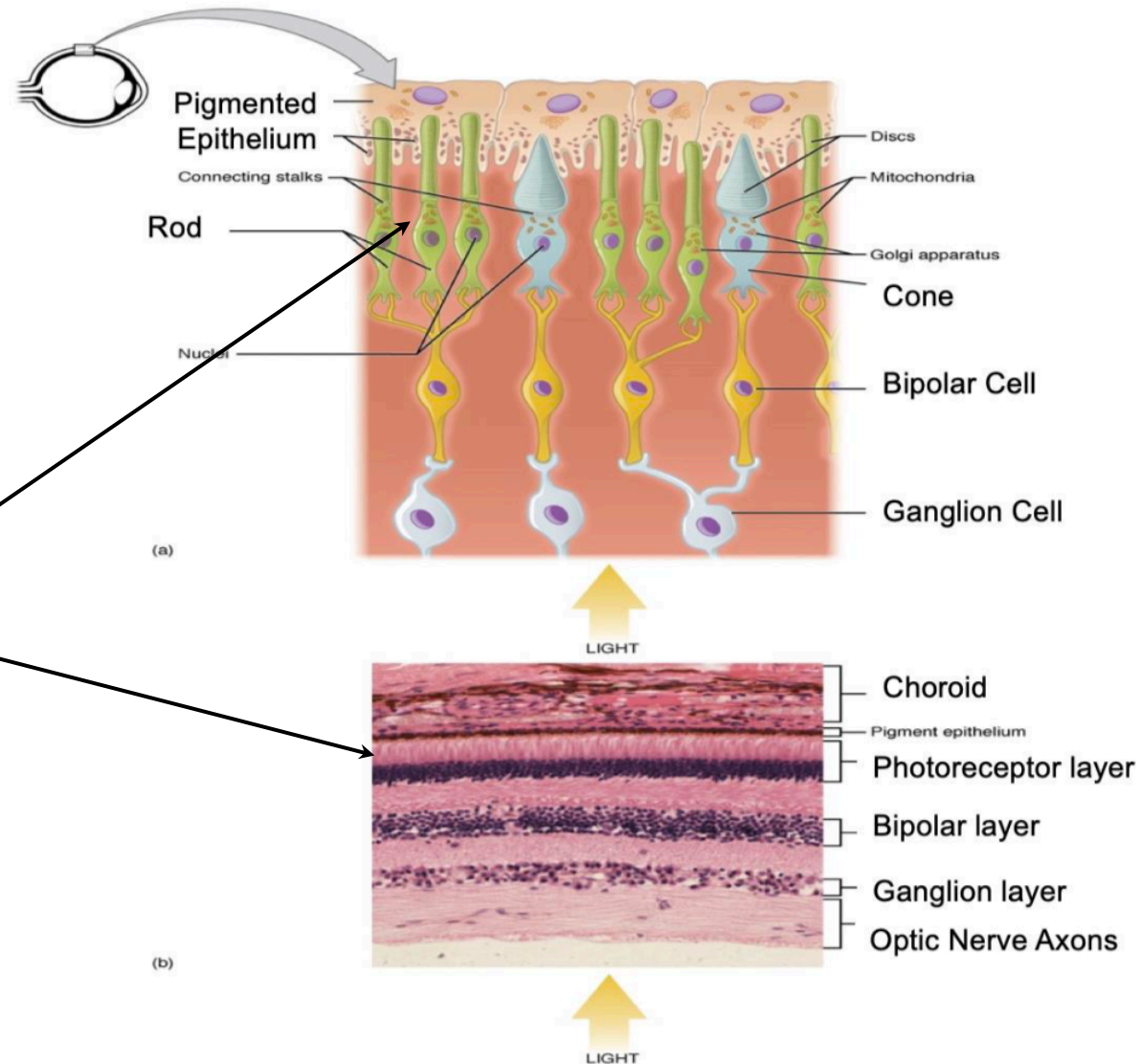


Figure 1: Anatomy of the eye

The Structure and Function of the Eye

View the microscope slide of the retina.

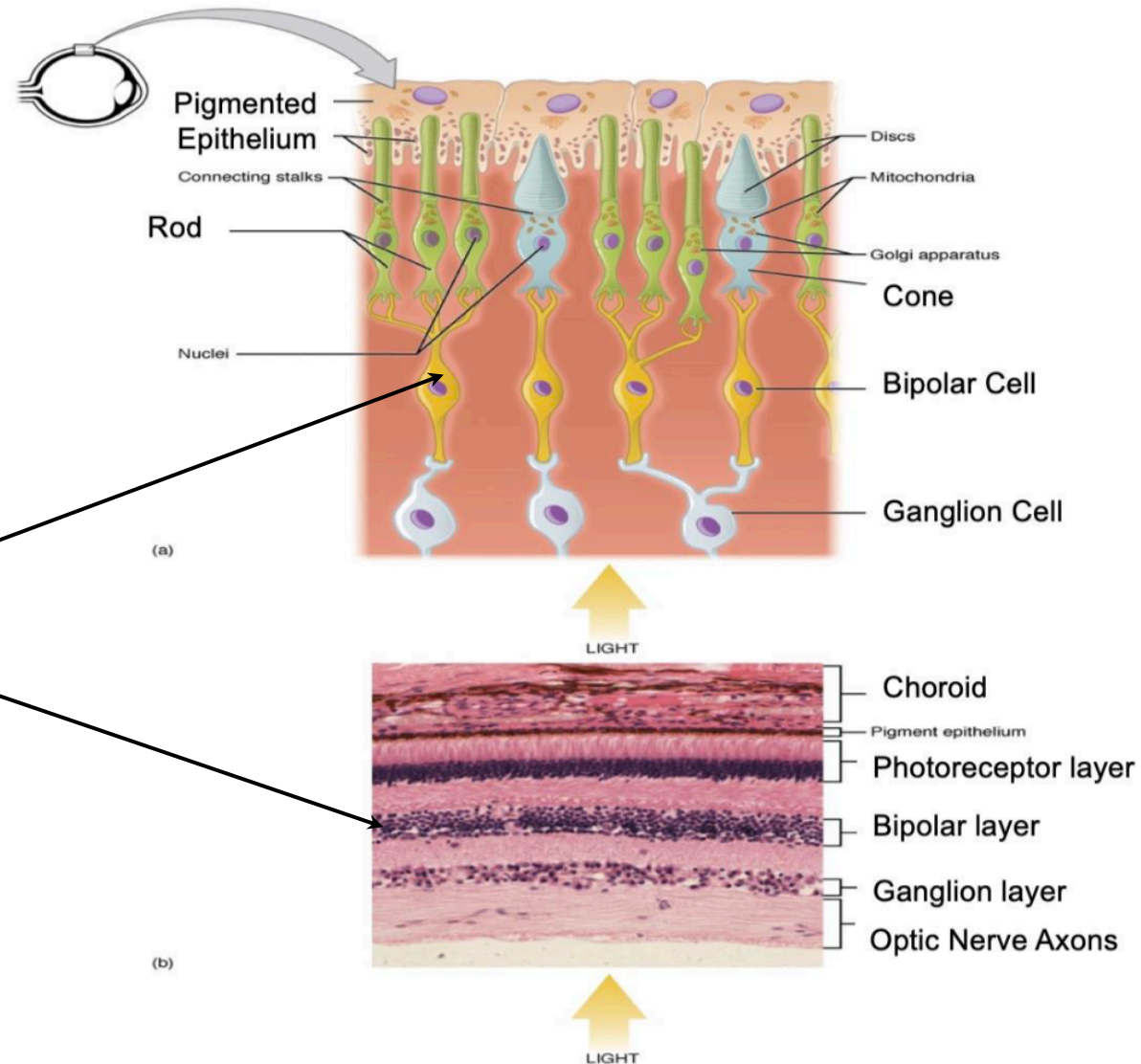
Photoreceptors:
up against pigment
layer, rods and
cones



The Structure and Function of the Eye

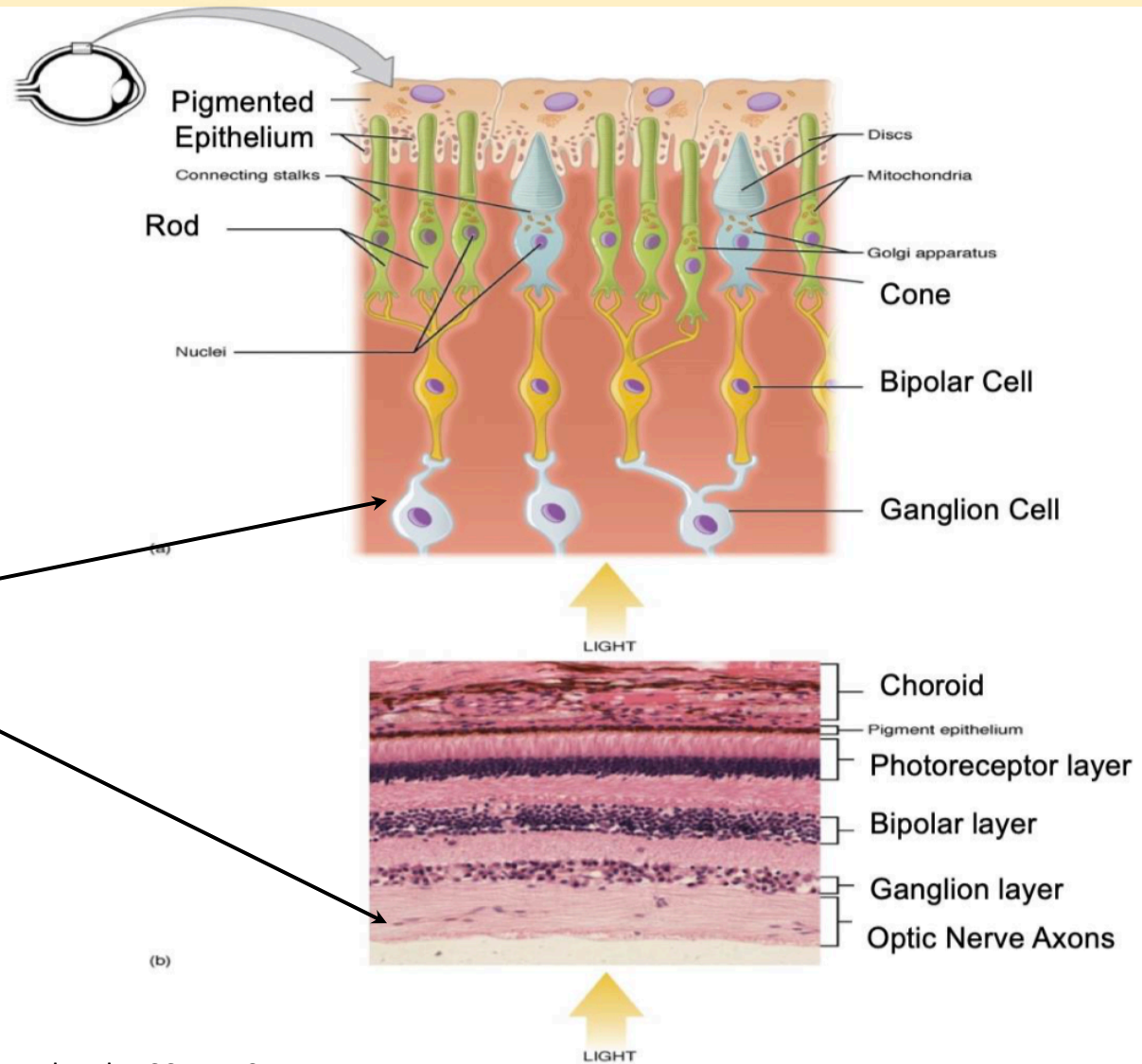
View the microscope slide of the retina.

Bipolar cells:
connect ganglion
cells to
photoreceptors



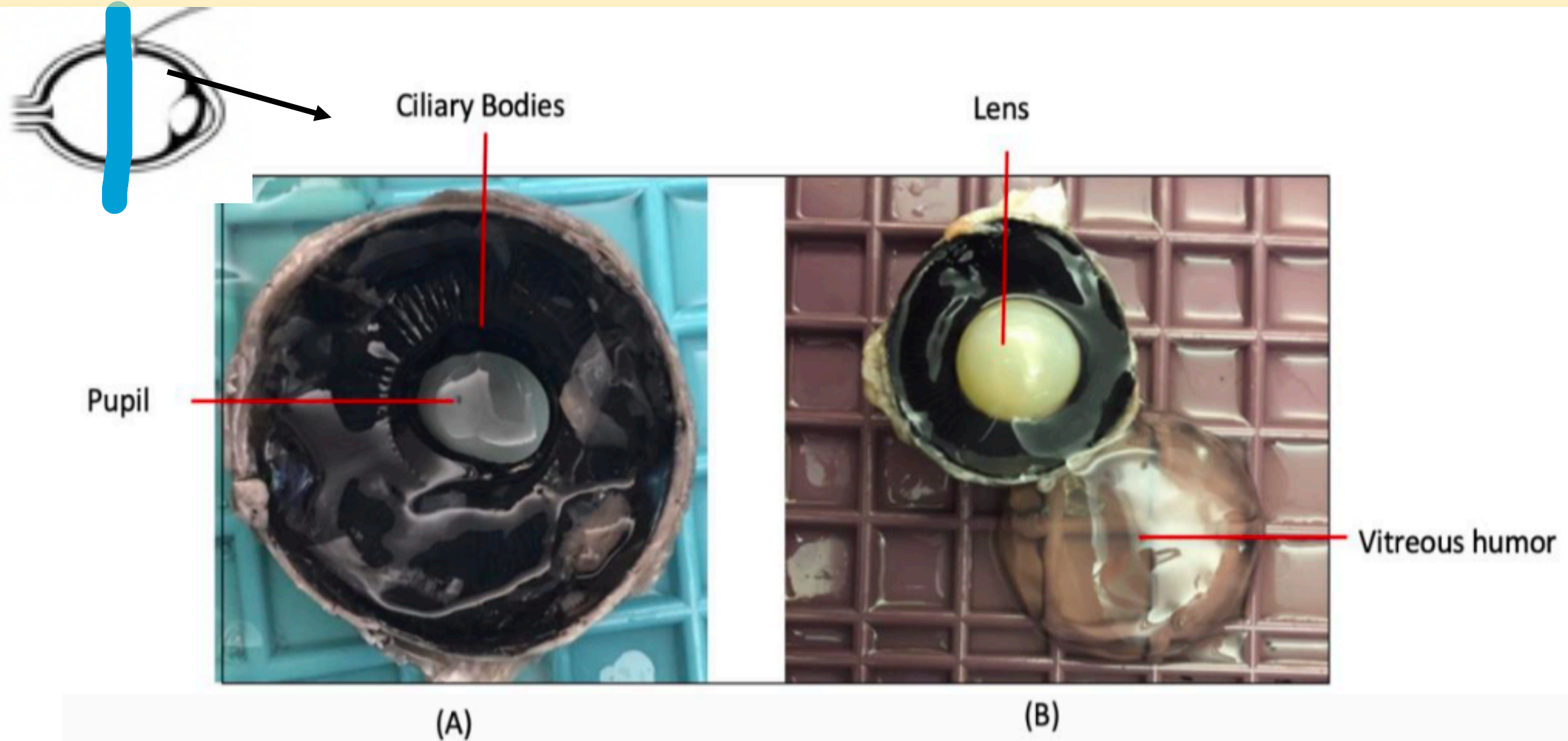
The Structure and Function of the Eye

View the microscope slide of the retina.



Ganglion cells:
converge as
optic nerve

Dissection of a Mammalian Cow Eye



Dissection of a Mammalian Cow Eye

Please wear safety goggles and gloves to dissect the cow eye.



Vitreous humor



(A)

Choroid (tapetum lucidum)



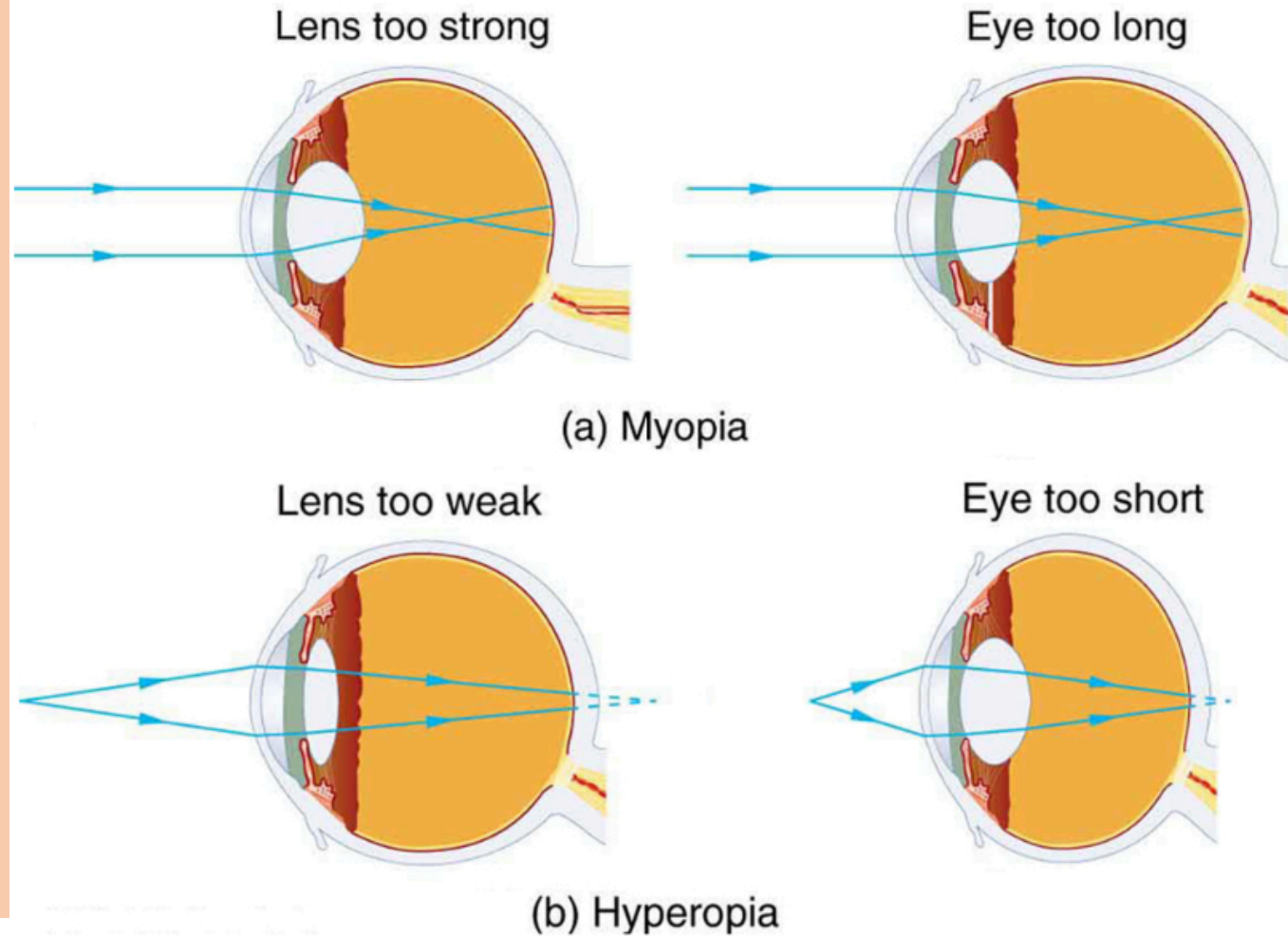
(B)

Eye Tests

You will now measure your visual acuity.

If the focal point is anterior to the retina, you have myopic vision (nearsighted).

If the focal point is posterior to the retina, you have hyperopic vision (farsighted).



Eye Tests

Using the Snellen chart, you will determine if you have normal vision or are nearsighted (myopic).

Your visual acuity are the numbers for the last row you can see accurately on the Snellen chart. You may make only 2 mistakes per line max!

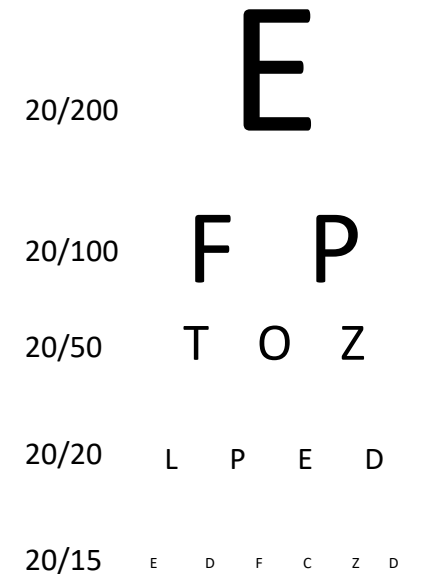
20/20

Numerator = what you see

Denominator = what other people see

Ex) 20/100 means that what you can see well at 20 feet, most people can see well at 100 feet

Ex) 20/15 means that what you can see well at 20 feet, most people can see well at 15 feet



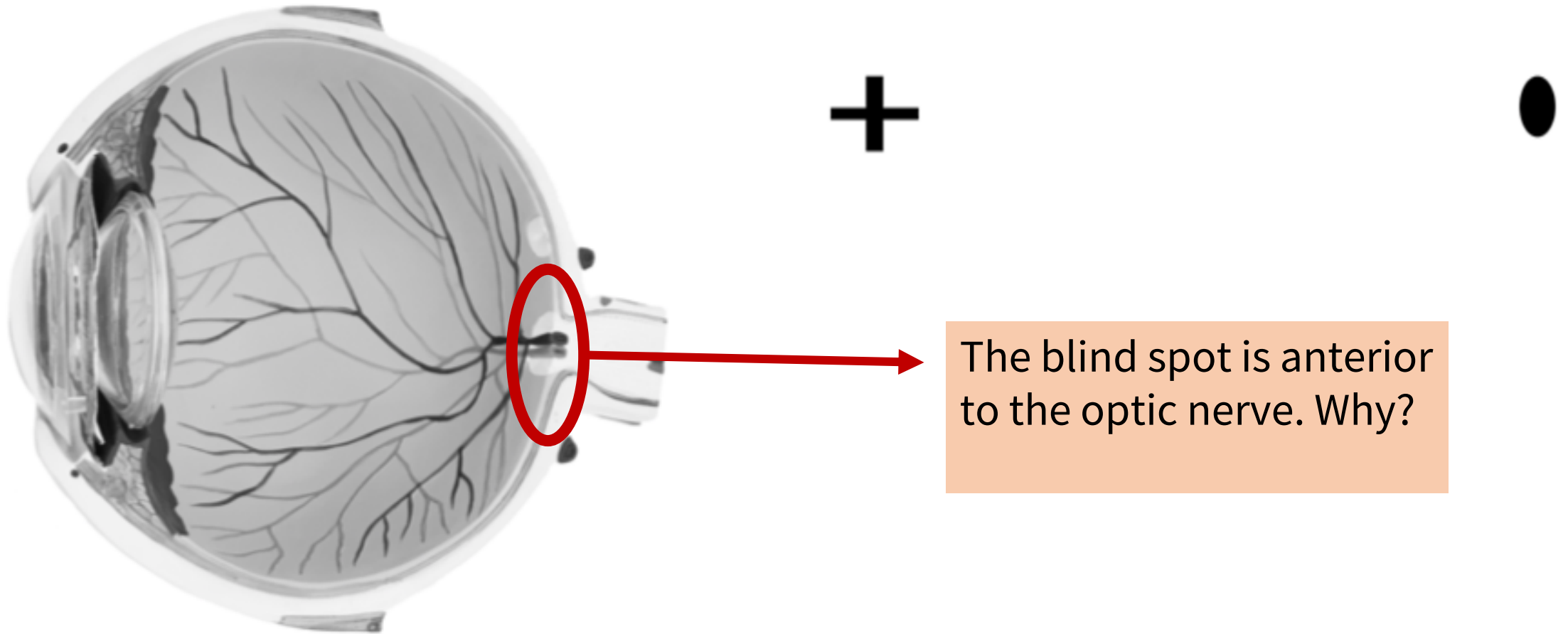
Eye Tests

Test for Color Blindness: Can you see the images?

Take your own colorblindness test here: <https://www.color-blindness.com/ishihara-38-plates-cvd-test/#prettyPhoto>

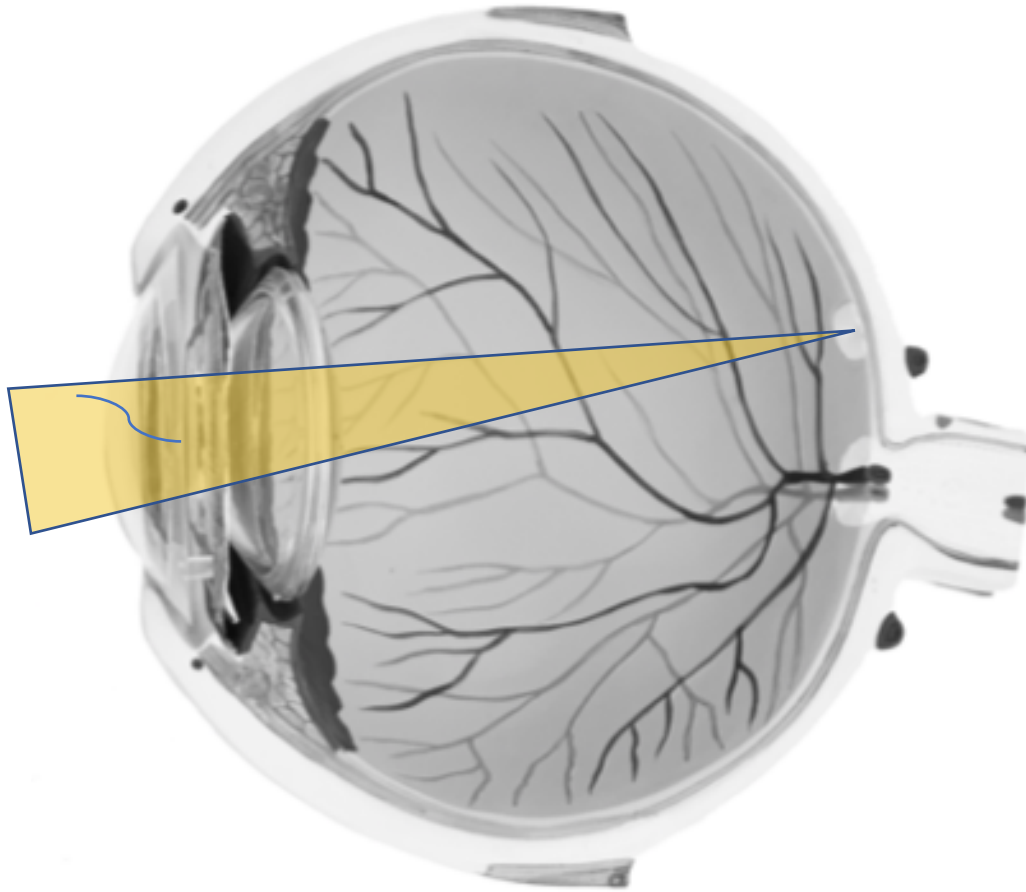
On the website, scroll down to the section that says take this test now!

Eye Tests



The blind spot is anterior to the optic nerve. Why?

Eye Tests



Astigmatism is an irregularity in the cornea or lens that distorts the focal point

Case Study: To Hear or Not to Hear

Case Study: “To hear or not to hear?”

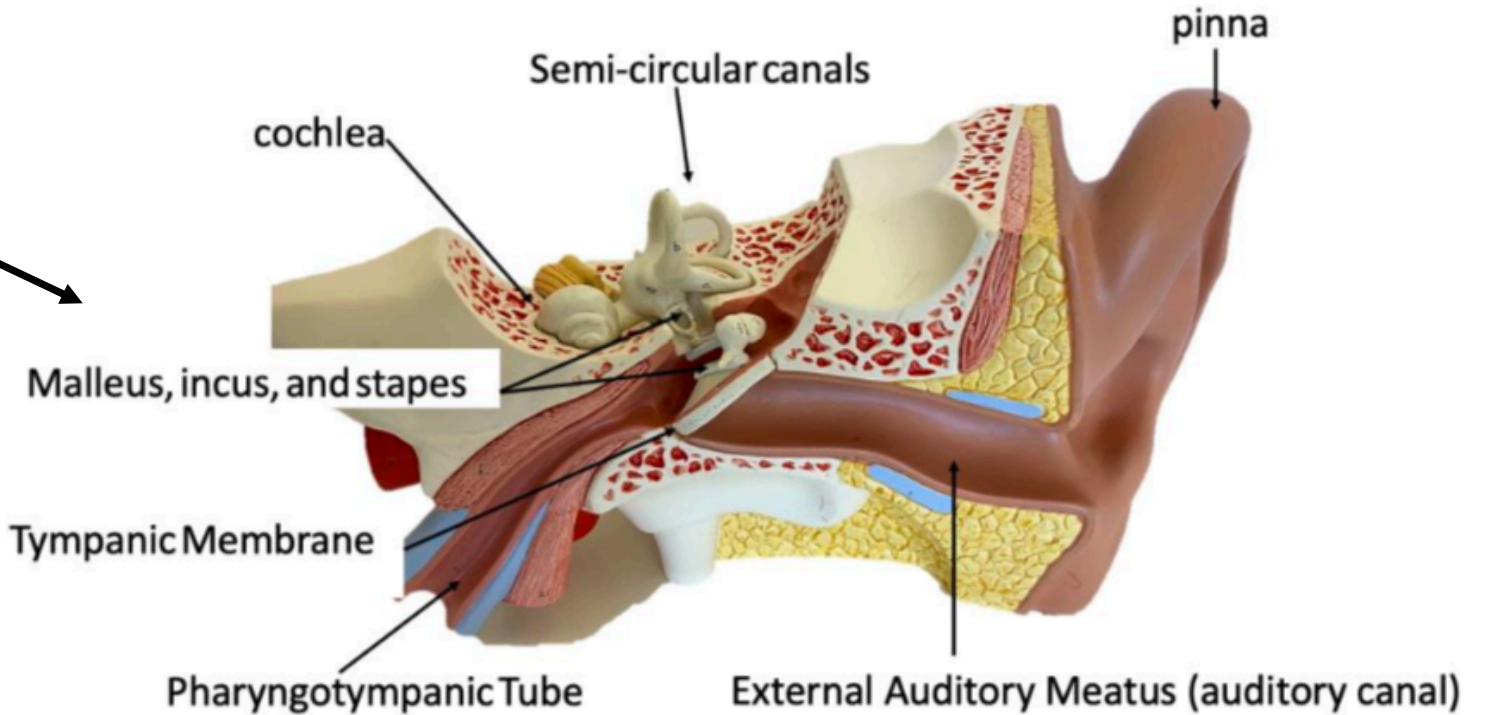
You are a nurse helping in an audiologist's office. This morning, your patient is a 2-year-old girl, named Anne. Her mother complains that her daughter doesn't respond to sound, even loud sounds, and she is worried that her daughter's stubborn behavior is more than just the terrible twos, but an inability to hear. Her mother also reports that her speech development is delayed, noting that her vocabulary seems stunted compared to other children in her day care room, and that she seems to have trouble forming some of her letters. In all other ways, the little girl is alert and oriented, responds well to attention and has normal vital signs. First you examine the anatomical structures of her ear using an otoscope and then proceed to administering a number of hearing tests.

The Anatomy and Physiology of the Ear

Let's trace the path of sound by putting the structure in order.

Make sure you can do this on your own!

Now Label the ear model



Sensorineural vs. Conduction Deafness

Conductive Deafness

- Difficulty getting the sound waves to the sensory receptors

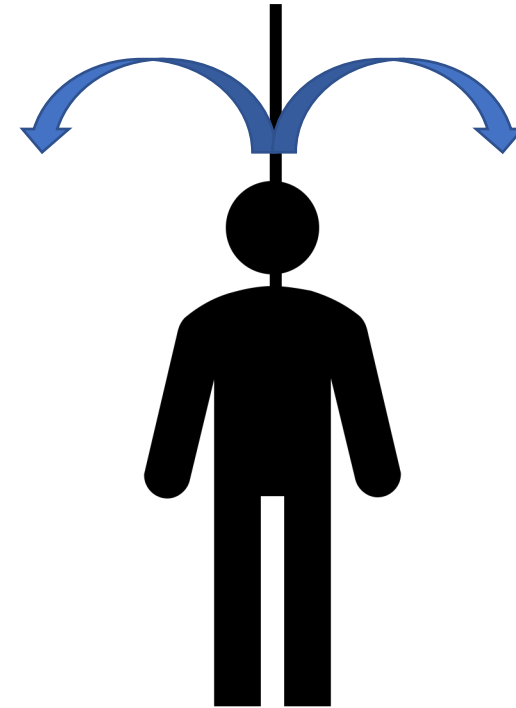
Sensorineural Deafness

- Damage to neural circuitry

The Romberg Test

The inner ear is also responsible for equilibrium and balance. Use the Romberg test to determine your equilibrium.

Draw vertical line on board behind patient



Lab Clean-Up: Before you leave be sure to...

- Please use warm soapy water to clean all of your dissection tools.
- Dry them with a paper towel and put them away.
- Remove the blue insert from the tray, and clean both with soapy water.
- Leave the blue insert to dry on the dry rack and wipe the tray dry with a paper towel.
- Be sure to spray down and wipe your lab bench!
- Place all sticky labels back in the binder.
- Check to make sure your microscope was put away properly.
- Place slides back neatly in the slide box.
- Place all material back in tray.