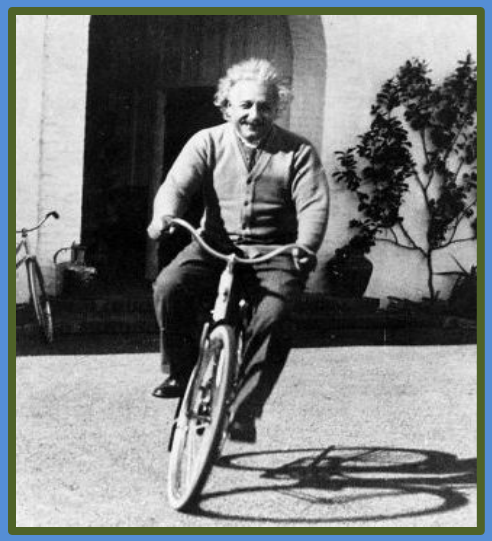

Senses
and
Perception

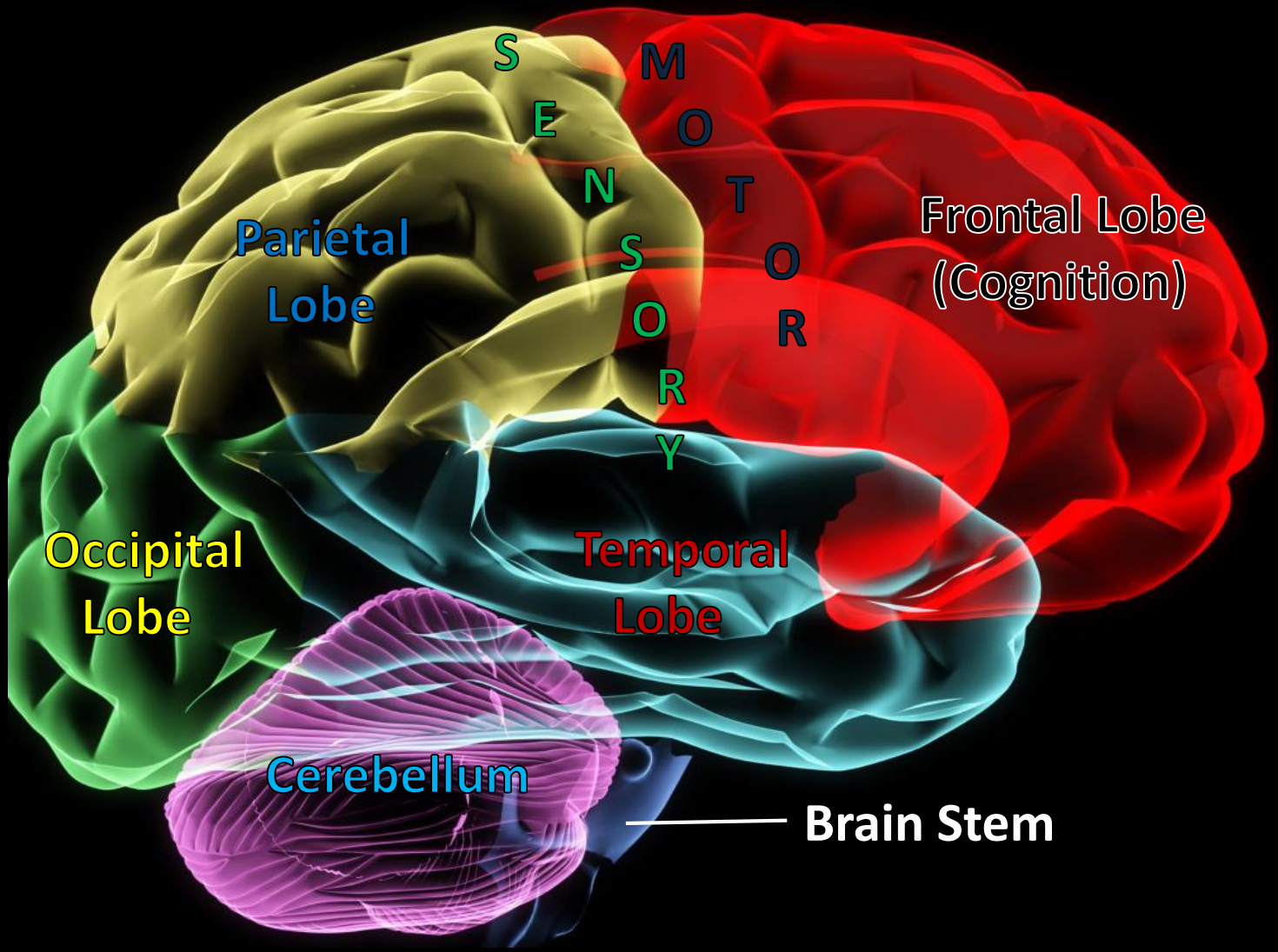
Introduction

Most of your brain is either devoted to sensations or motor functions (movement of muscles), and a history of your motor or sensation functions (what you have sensed or moved in the past). The cognitive area is actually a pretty small area of the frontal lobe. And what the mechanism of action is in the brain is not very well understood, because the brain and how it works, is the one organ physiologists don't have a very good handle on.

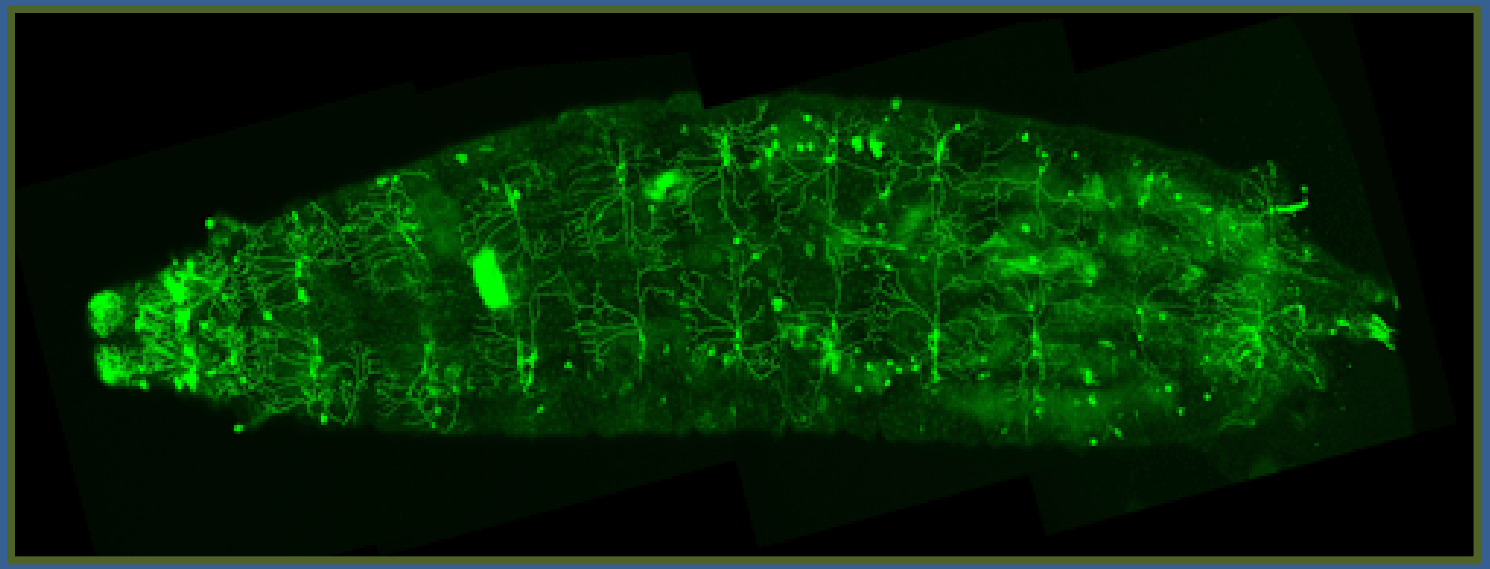


Once you have learned how to ride a bicycle you do not totally have to relearn it again -even though you haven't pedaled one for 50 years- because your brain has stored muscle memories that can be activated at will.

Lobes of the Brain with the Sensory and Motor (movement) Gyri (Convolutions)



Feel



A pathway channel for gentle touch has been found in *Drosophilia* larvae

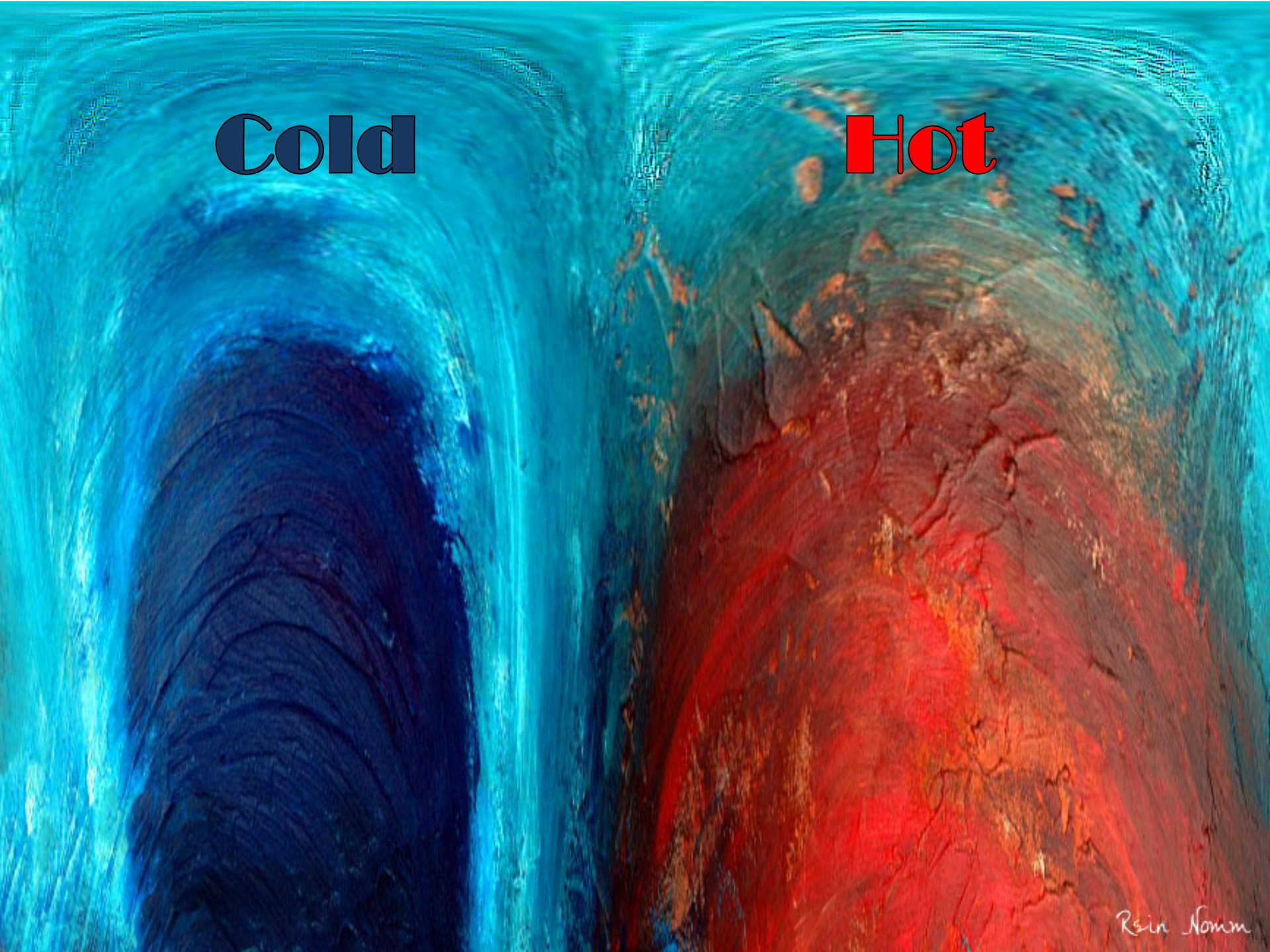
Exercise 1: Touch

The sense of touch is actually more than one sense when you consider that there are various kinds of receptors for various kinds of touch. For instance, tactile receptors are different from pressure receptor, which are different from stretch receptors, which are different from proprioceptors.

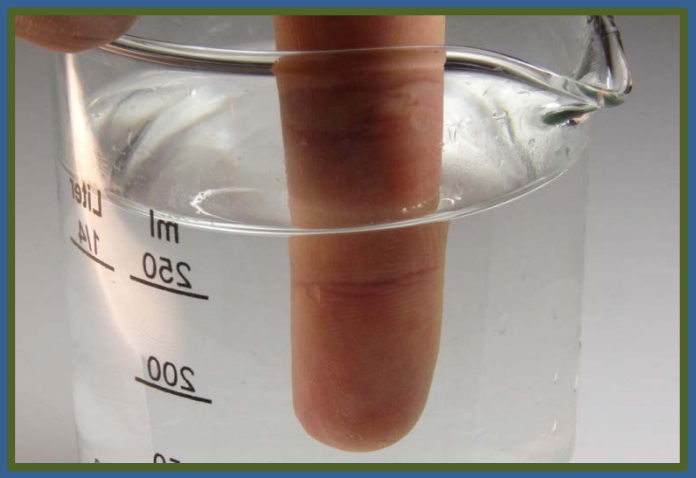
In this exercise you will just focus in on the tactile receptors of your skin, and their various densities over your body, and how this makes you more or less sensitive in certain areas.

Although, being a person of extreme sensitivity to the sense of "tickle," I would personally like to know why this is the one sensation we cannot produce on ourselves. That sensation requires another person.

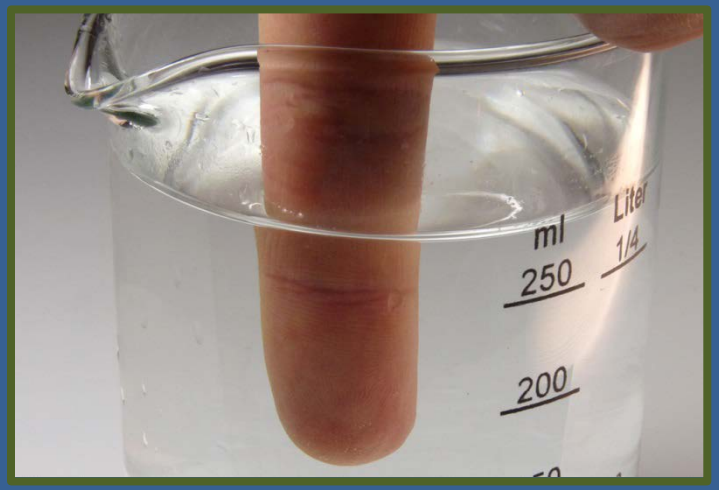
Answer questions 1-4 on page 352.


Cold
Hot

Exercise 2: Temperature Sensation



Warm Water 50 °C



Cold Water 10 ° C

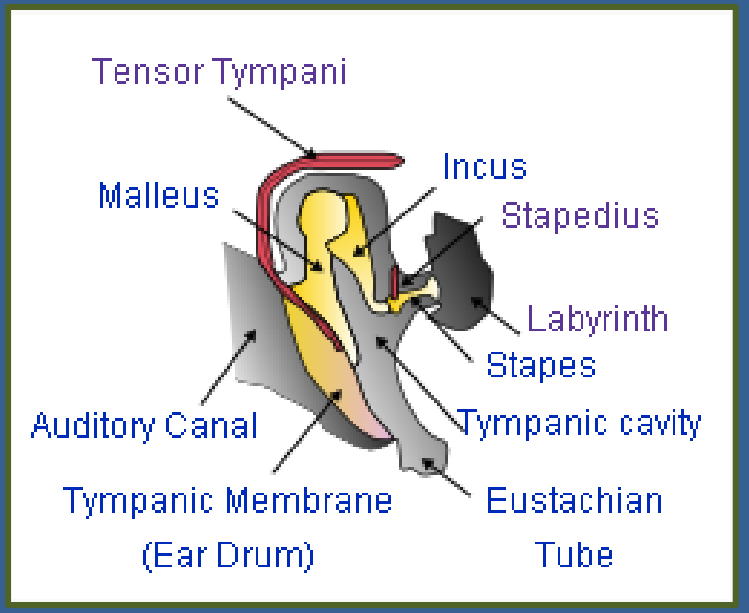
Answer question 3 on page 353

Room Temperature 30 °C water with warm water and cold water fingers.

Exercise 3: Hearing

Fill in Table on page 354.

Evolution of the Middle Ear



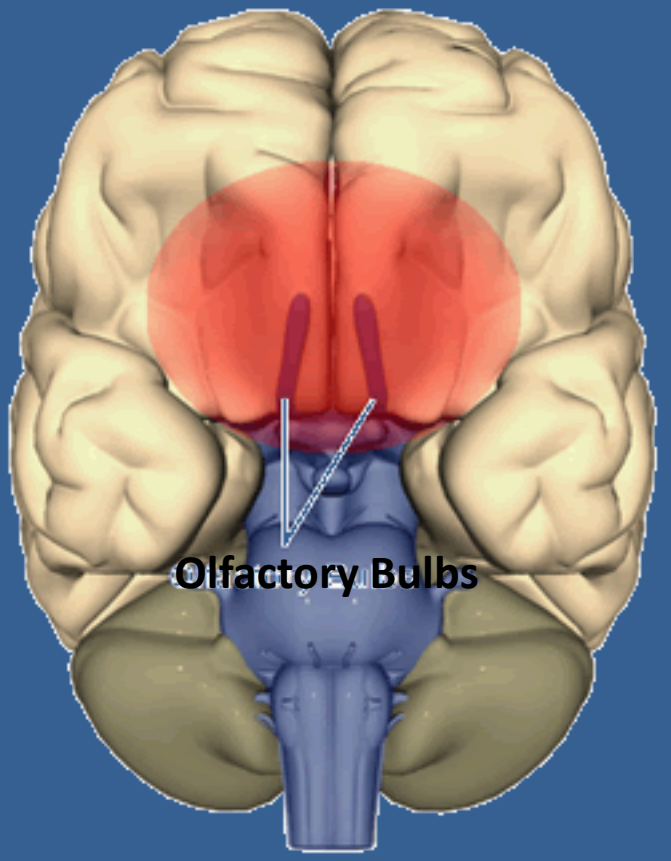
In reptiles, the eardrum is connected to the inner ear via a single bone, the columella, while the upper and lower jaws contain several bones not found in mammals. Over the course of the evolution of mammals, one lower and one upper jaw bone lost their purpose in the jaw joint and were put to new use in the middle ear, connecting to the stapes and forming a chain of three bones (collectively called the ossicles) which amplify sounds and allow more acute hearing.

The reason mammals have acute hearing is because they have a "reptilian jaw" in their ears!

Smell is second only to vision in terms of human sensory apparatus. Linda Brown Buck along with Richard Axel, each awarded a Nobel prize, have shown that there are a thousand individual receptors for smell. We're not as sensitive as dogs, but we're not bad.

Exercise 4: Smell

Smell (olfaction), unlike the other senses is first sent through the limbic system (our emotional gut, which gives meaning to many of our thoughts and emotions) before being integrated in the primary olfaction area of the brain in the inferior gyrus (shown in red). As such, the sense of smell evokes many emotional memories of where we were when, and what we were doing, when first experiencing the odor.



Fill in the Table on page 355,
and answer questions 1 and 2 page 356.

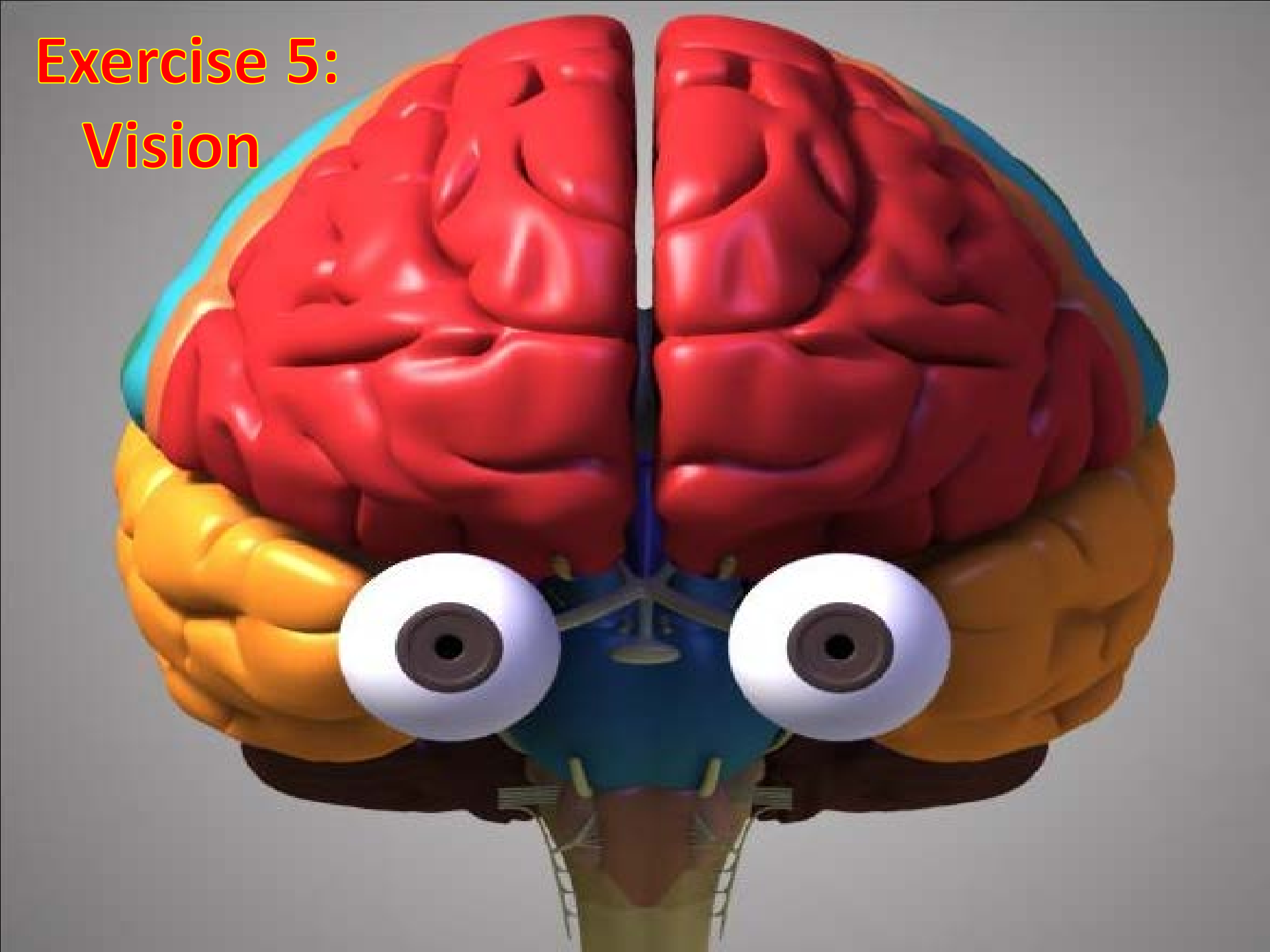
Exercise 5: Taste

Our taste buds are not all located on our tongue. Many are at the back of our throat embedded in the back of the pharynx, on both the soft and hard palates of the roof of our mouths, and some on our cheeks.

Also, our sensitivity to taste is genetically controlled, such as "super tasters," which can be super sensitive and abhorrers to the taste and smell of fats and butter. Don't you wish you were, too?

Answer questions 1-3 on page 356,
and 1-3 on page 357.

Exercise 5: Vision



The bulbous ends of the optic nerves, the eyes, are the only nerves you can see! We are primarily visual animals and, as such, are day-time active. Deep inside us the dark is scarey. When it's pitch-black, we can easily become unnerved.

Answer questions 1-3 on page 358, and 1-2 also on page 358.

Exercise 7: Reflexes

Involves both the brain and the spinal cord.

Answer questions 1-3 and 1-4, both sets on page 360.

One can also determine whether your brain is sending out facilitatory or inhibitory signals by observing a kids shins. If a child has a lot of bruises on their shin bone (the tibial crest has no muscle covering to cushion and absorb the blows) then they are probably a fast-reactor, with fast reflexes, and don't spend a lot of time thinking about their movement because of it; consequently they bump into things and other people frequently. One where inhibitory signals dominate probably don't have lots of bruising.

There really is the "fast and the slow," the "quick and the dead."