Mapping the Location of your Taste Buds

What are those bumps on my tongue?!?!?

The number of visible papillae will be counted on the surface of the tongue.

Materials:

Blue food coloring
Magnifying glass
Paper cup
2 cotton swabs
Flashlight
One sheet of 3-hole punched notebook paper
One sheet of blank white paper
Scissors
2-paper towels or napkins
Digital camera (optional)

Procedure:

Put a few drops of blue food coloring into a paper cup.

Dip the tip of a cotton swab into the blue food coloring and use it to paint the first inch (2-3cm) of your tongue.

Move your tongue around in your mouth and swallow to distribute the food coloring evenly.

Lightly pat your tongue dry (once or twice only) with a paper towel or napkin.

Use the scissors to cut out the holes of the notebook paper. You will be using the holes as "windows" by placing the paper on the tip of your tongue as shown in the following picture:

If you wish, you can take a picture of your tongue at this time for analysis. If not, you may need a partner to shine a light on this area of your tongue and use a magnifying glass to examine the blue-stained area inside the circle.

You may also attempt to create a tongue print to analyze the amount of papillae on your tongue.

To do this, press a piece of white paper firmly onto the dried blue surface of your tongue.

Remove the paper and place the notebook paper "window" over the paper to create a sample reading. The papillae will appear as light colored circles within the blue background.

Using whichever method you choose, count the number of light-colored circles within the "window" and compare it to the following chart:

Number of papillae within window	Title for Taster
<10 within window	Non-taster
10-30 within window	Taster
>30 within window	Supertaster

What does this mean? Read the explanation below…

Explanation:

Papillae, as you learned in this week's readings, are visible mushroom-shaped projections on your tongue which contain taste buds There is a relatively large difference in the number of papillae throughout the population. And since papillae contain the tongue's taste buds, their concentration has a profound effect on a person's food preference.

It has been documented that people with a higher number of papillae on their tongue are more likely to be sensitive to bitter tastes. The additional column will help provide a more thorough understanding of what it means to be a "Non-taster", "Taster", or "Supertaster".

Number of papillae within window	Title for Taster	Explanation
<10 within window	Non-taster	Generally do not find foods to be bitter in taste
10-30 within window	Taster	Typically perceive some foods to be bitter, but not intensely so
>30 within window	Supertaster	Generally are very sensitive to bitter tastes, and generally perceive the following to be bitter in taste: raw broccoli, raw cauliflower, Brussels sprouts, saccharin, unsweetened chocolate, black coffee and salt substitute

Choose the correct answer in the following questions:

1) **Which of the following effects is characteristic of the parasympathetic nervous system:**
   a) increases heart rate
   b) stimulates sweat glands to produce perspiration
   c) decreases heart rate
   d) increases activity of the digestive system
   e) decreases activity of the digestive system

2) **Which one of the following is the correct sequence of nerves that exist within the spinal cord, going from superior to inferior:**
   a) cervical, lumbar, thoracic, sacral
   b) cervical, thoracic, sacral, lumbar
   c) thoracic, cervical, sacral, lumbar
   d) thoracic, cervical, lumbar, sacral
   e) cervical, thoracic, lumbar, sacral

3) **The function of the olfactory nerve concerns:**
   a) smell
   b) chewing
   c) vision
   d) eye movement
   e) hearing

4) **True or False:** Cranial nerve XI is the nerve that controls the movement of the eye.

5) **True or False:** If exposed to bright light, the pupil will enlarge.

6) **True or False:** The olfactory receptors are responsible for the sense of taste.

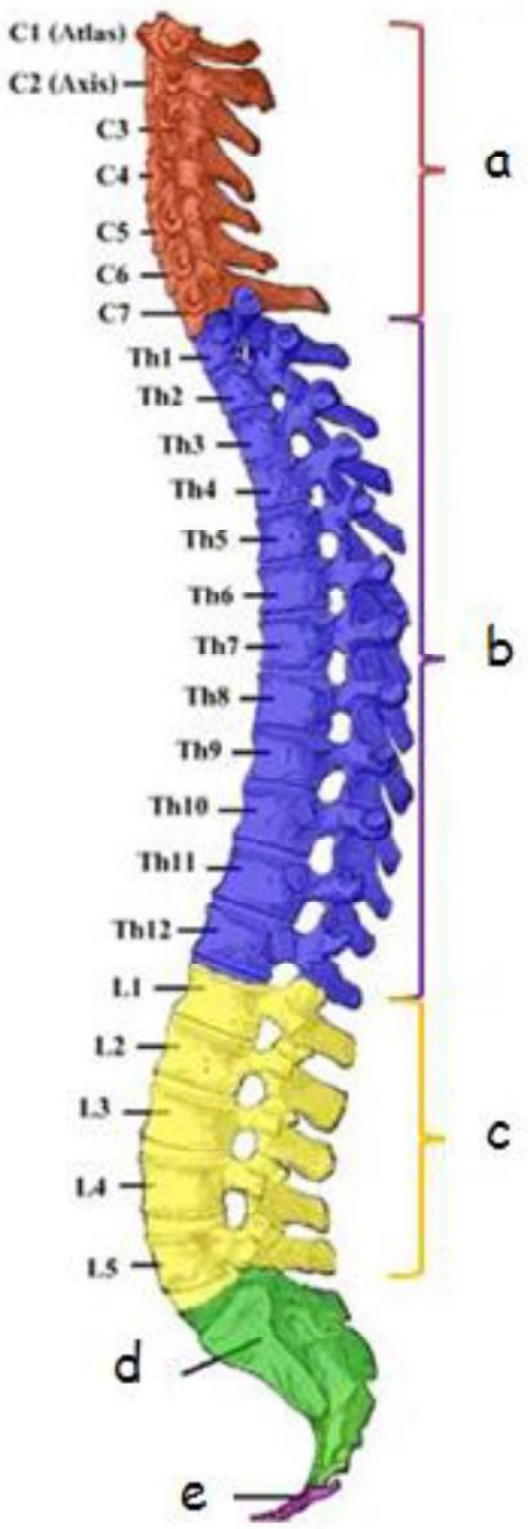
7) **True or False:** The "stirrup" is also referred to as the stapes.

8) Some student nurses are at a party. Because they love anatomy and physiology so much, they are discussing the functions of the special senses. They make the following observations:
   a) When entering a room, an odor like cooking bacon is easily noticed. A few minutes later, the odor might be barely, if at all, detectable, no matter how hard one tries to smell it.
   b) When entering a room, the sound of a ticking clock can be detected. Later the sound is not noticed until a conscious effort is made to hear it. Then it is easily heard.

   Explain the reasons for both of these observations.

9) Professional divers are exposed to increased pressure as they descend to the bottom of a large body of water. Sometimes this pressure can lead to damage to the ear and loss of hearing. How does the body adjust to changes in pressure and explain how the increased pressure might cause loss of hearing.

10) Correctly identify the following structures within the following image. Use the words from the word bank below:



WORD BANK: coccyx, cervical nerves, sacrum, lumbar nerves, thoracic nerves

a)

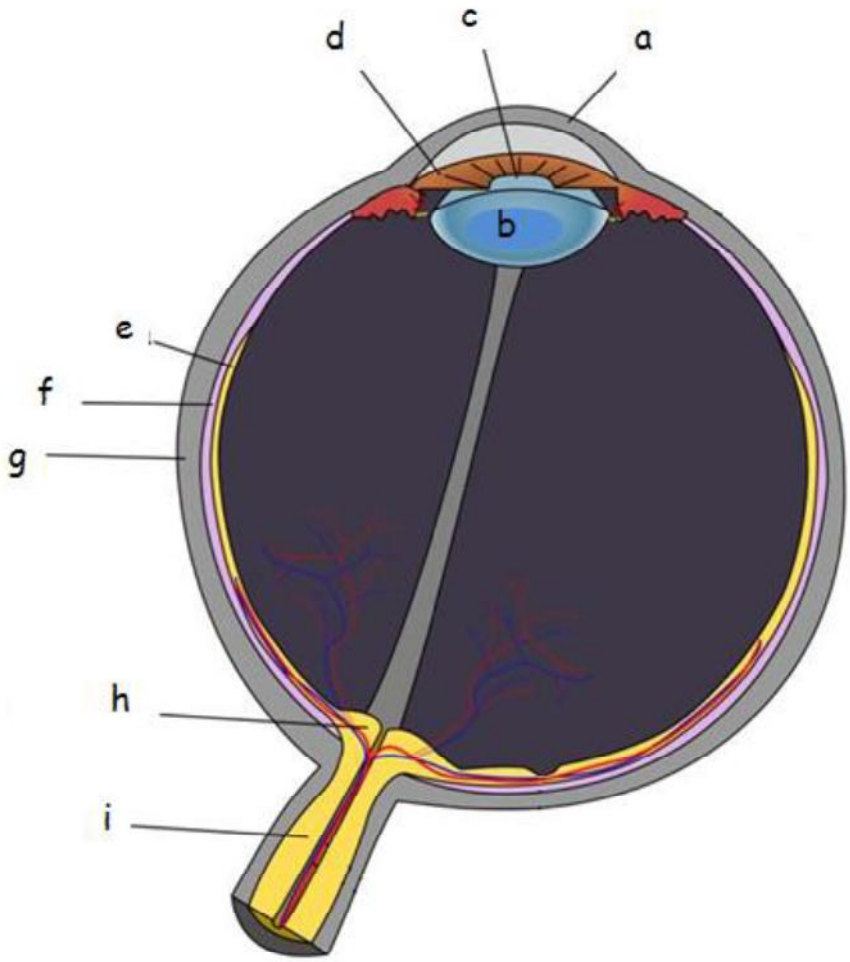
b)

c)

d)

e)

11) Correctly identify the following structures within the following image. Use the words from the word bank below:



WORD BANK: iris, pupil, retina, optic disk, lens, optic nerve, choroid, cornea, sclera

a)

b)

c)

d)

e)

f)

g)

h)

i)

Unit Quiz Answer Key

1) c
2) e
3) a
4) F
5) F
6) F
7) T

8) a - The most likely explanation is that the lack of an extreme response by the body throughout a flooding of chemoreceptors with odor molecules from the bacon results in the brain no longer responding to this stimulus.

   b- Much like with the previous answer, the brain no longer responds to this stimulus until you consciously pay attention to it. Much like hearing your name called in a crowded room will cause you to consciously pay attention to the single conversation concerning you throughout a potential sea of conversations around you.

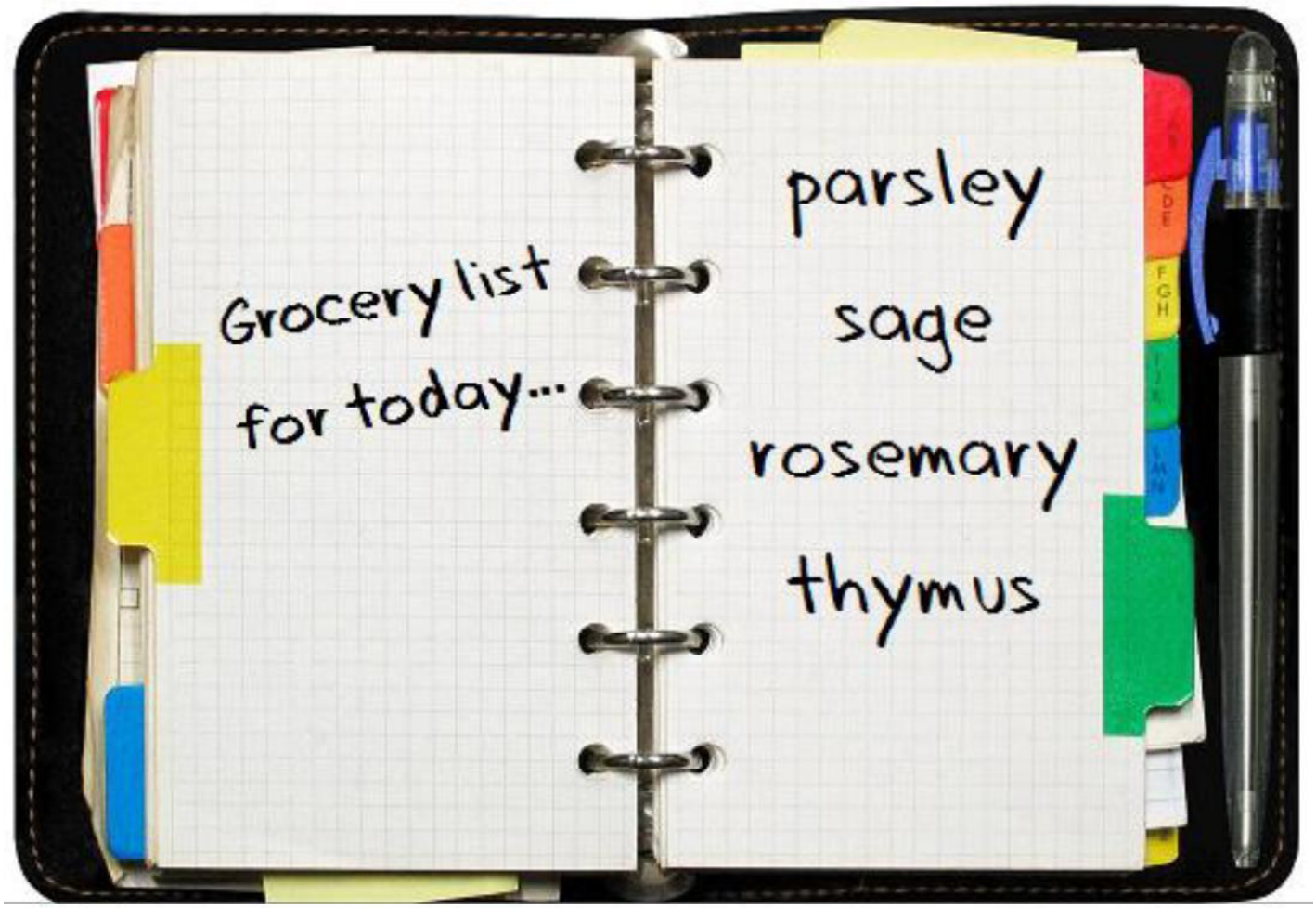
9) Normally, as pressure changes, the Eustachian tube opens to allow an equalization of pressure between the middle ear and the external environment. If this doesn't occur, then the buildup of pressure in the middle ear can rupture the tympanic membrane, or the pressure can be transmitted to the inner ear (cochlea) and cause damage to its mechanoreceptors.

10) Word match from picture:
   a) cervical nerves
   b) thoracic nerves
   c) lumbar nerves
   d) sacrum
   e) coccyx

11) Word match from picture:
   a) cornea
   b) lens
   c) pupil
   d) iris
   e) retina
   f) choroid
   g) sclera
   h) optic disk
   i) optic nerve

Chapter Twelve

Endocrine System – Part I



Day One:

Today, your child should complete their reading and practice problems for the week.

Below are the supplies for this week's lab:

2 sticks (225g) unsalted butter, cut into pieces
Small saucepan
Glass measuring cup (Pyrex)
Plastic wrap
Spoon

National Science Education Standards covered this week:

12CLS5.2 The energy for life primarily derives from the sun. Plants capture energy by absorbing light and using it to form strong (covalent) chemical bonds between the atoms of carbon-containing (organic) molecules. These molecules can be used to assemble larger molecules with biological activity (including proteins, DNA, sugars, and fats).