

The Sense of Smell & Taste

I. The Sense of Smell

A. The receptors for smell (olfaction) are located in the nasal cavity

1. The receptors for smell are _____
2. This type of receptor detects _____
3. For olfaction these cells are called _____
4. There are about 100 million of these cells in the **olfactory membrane**.
5. This membrane is located in:

B. Anatomy of an olfaction cell

1. Each olfaction cell ends in a _____, which contains several cilia. These cilia are called _____
2. Next to the olfaction cells are several other types of cells. They are:
 - a. _____
 - b. _____
 - c. _____
3. The function of the olfactory glands (Bowman's) is

4. Draw a simple diagram of the olfactory cell with its support cells.

C. Olfaction Involves Chemoreception

1. To smell odors they must be carried by the air & enter the nasal cavity.
2. The odors need to be partially dissolvable in water, and _____.
3. Odor chemicals contact the olfactory hairs & combine with _____
4. The following sequence happens when you smell something:

Odor in nasal cavity

D. The Stereochemical Theory (SCT) of Olfaction

1. There may be _____ specific protein receptors on the olfactory hairs.
2. Each olfactory hair may have many different kinds of protein receptors.
3. The SCT of olfaction provides a system capable of telling the difference between _____ of different odors.
4. There seven primary olfactory classes of odors (there my be more than 50,) list them:

5. A lack of zinc in the diet can lead to _____, which is a disorder that causes the absence of the sense of smell.

6. The olfactory cells send an action potential to the _____ nerves. The nerves pass through the _____ plate of the skull. These nerves end at the _____ bulb, found on the frontal lobes of the _____. The axons now become the _____ tracts and move to the cortex.

Olfactory cells

_____ nerves

II. The Sense of Taste

A. Taste (gustation) receptors are located within the taste buds.

1. Our sense of taste is located in the _____.
2. They are located where? _____.
3. How many taste buds do we have? _____ What about small children? _____.
4. Our taste buds contain about _____ modified epithelial cells. Some are _____ cells, while others are support cells and _____ cells.
5. The gustatory cells are arranged around a small **taste pore**. Each cell has several _____ hairs extending into the taste pore.
6. Make a simple drawing of a gustatory cell

B. Anatomy of a taste bud.

1. Taste buds are located on structures called _____.
2. There are four kinds of these structures, name them:
 - (a) _____
 - (b) _____
 - (c) _____
 - (d) _____
3. Which of these structures don't contain taste buds? _____

C. The Primary Taste Sensations

1. List them: _____
2. Current research has found that all parts of the tongue can taste all of the above sensations, but certain areas of the tongue are more sensitive to certain sensations. Make a drawing of the tongue and these areas

3. A sour taste usually comes from sensing _____, a salty taste from _____, sweet from _____.
Bitter taste is from nitrogen containing compounds as well as _____.
4. To be tasted, substances must be dissolved in _____.

D. Taste Sensations and Other Receptors

1. Other receptors play a part in taste name them:

2. 80% of our taste is actually _____!