Slide 1

Special Senses: taste and smell

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Slide 2

Chemical Senses: Taste and Smell

- Both senses use chemoreceptors
  - Stimulated by chemicals in solution
  - Taste has four (major) types of receptors and some minor
  - Smell can differentiate a large range of chemicals (appx: 10,000)
  - Both senses complement each other and respond to many of the same stimuli

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Slide 3

Olfaction—The Sense of Smell

- Olfactory receptors are in the roof of the nasal cavity
  - Neurons with long cilia
  - Chemicals must be dissolved in mucus for detection
  - Impulses are transmitted via the olfactory nerve
  - Interpretation of smells is made in the cortex

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Slide 4

Olfactory Epithelium

![Olfactory Epithelium](image)

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Slide 5

The Sense of Taste

- Taste buds house the receptor organs
  - Location of taste buds
    - Most are on the tongue
    - Soft palate
    - Hard palate
      - Dentures will alter taste sensations
    - Cheeks
Slide 6

**Taste Buds**

Figure 8.18

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Slide 7

**The Tongue and Taste**

- The tongue is covered with projections called papillae
  - Filiform papillae—sharp with no taste buds
  - Fungiform papillae—rounded with taste buds
  - Circumvallate papillae—large papillae with taste buds
  - Taste buds are found on the sides of papillae

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Slide 8

**Structure of Taste Buds**

- Gustatory cells are the receptors
  - Have gustatory hairs (long microvilli)
  - Hairs are stimulated by chemicals dissolved in saliva

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Slide 9

**Structure of Taste Buds**

- Impulses are carried to the gustatory complex by several cranial nerves because taste buds are found in different areas
  - Facial nerve
  - Glossopharyngeal nerve
  - Vagus nerve

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Slide 10

**Taste Sensations**

- Sweet receptors
  - (sugars)
  - Saccharine
  - Some amino acids
- Sour receptors
  - Acids
- Bitter receptors
  - Alkaloids
    - Includes may poisons
- Salty receptors
  - Sodium and related ions
- Recently discovered:
  - Greasy
  - Umami (savory-meaty)
  - Metallic
Eye problems

- **Strabismus**—“crossed eyes” results from unequal pulls by the external eye muscles in babies.
- **Ophthalmia neonatorum**—conjunctivitis resulting from mother having gonorrhea. Baby’s eyelids are swollen and pus is produced.

Eye problems

- **Presbyopia**—“old vision” results from decreasing lens elasticity that accompanies aging.

Ear problems

- **Presbycusis**—type of sensorineural deafness
- **Otosclerosis**—ear ossicles fuse