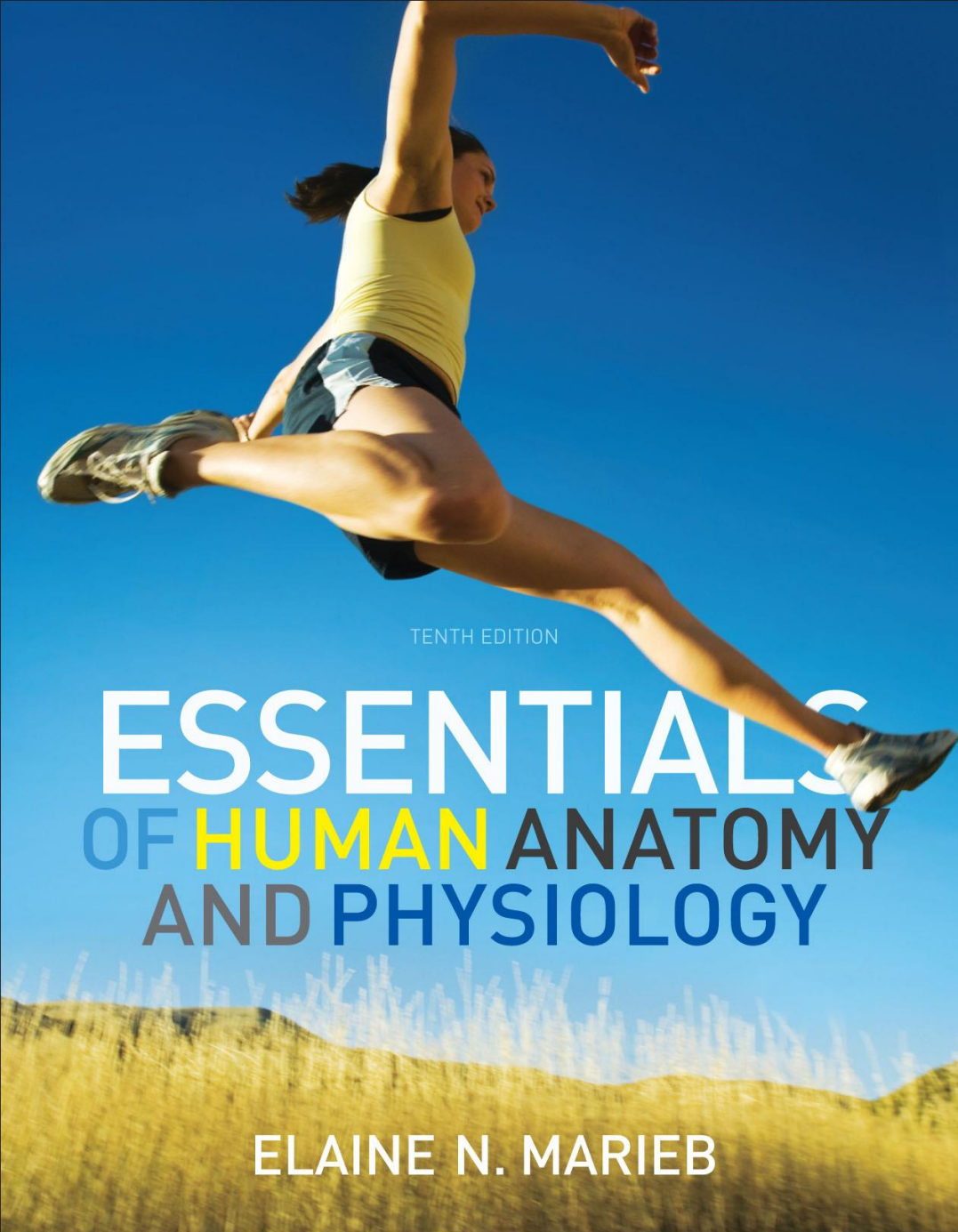


# PowerPoint® Lecture Slides

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## CHAPTER 8

# Special Senses



TENTH EDITION

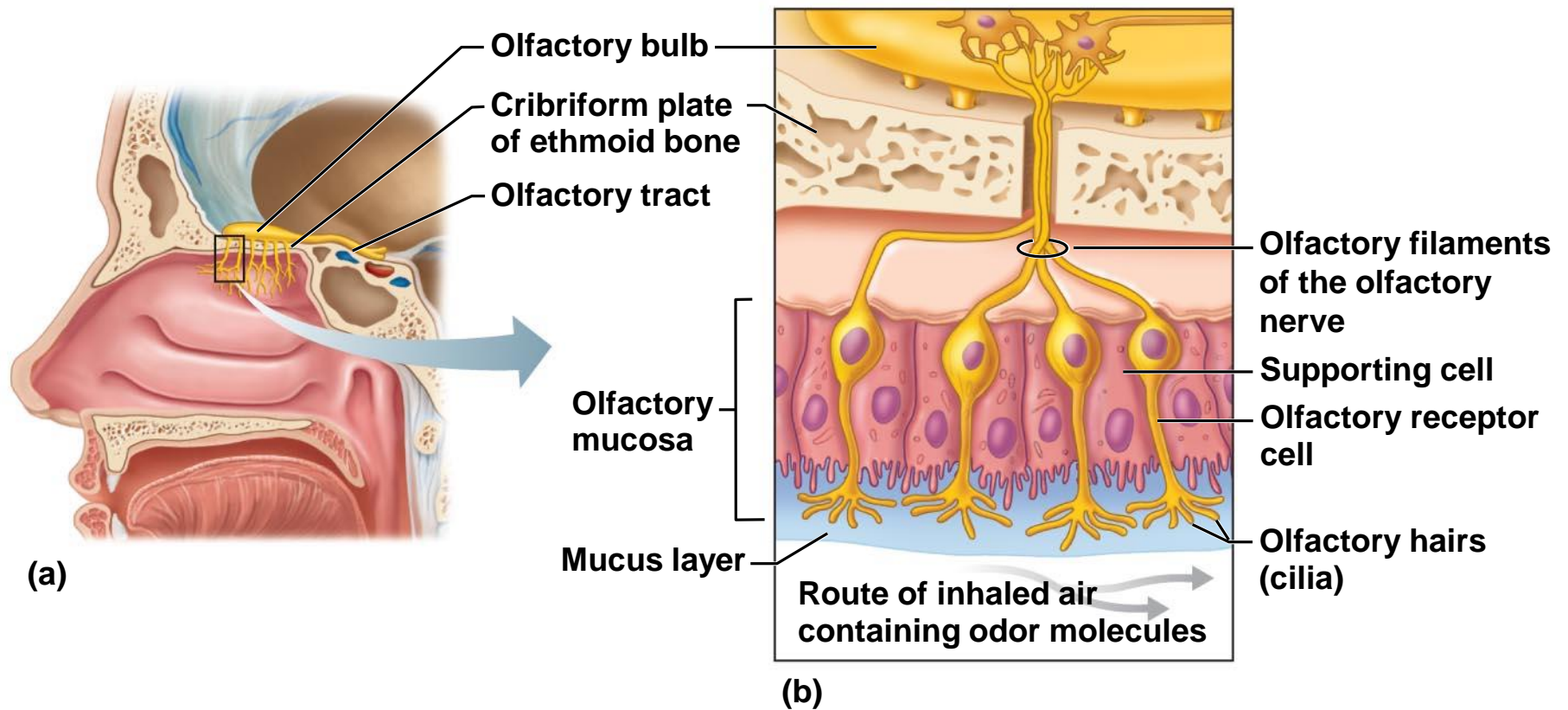
# ESSENTIALS OF HUMAN ANATOMY AND PHYSIOLOGY

ELAINE N. MARIEB

# **SENSE OF SMELL**

### (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**

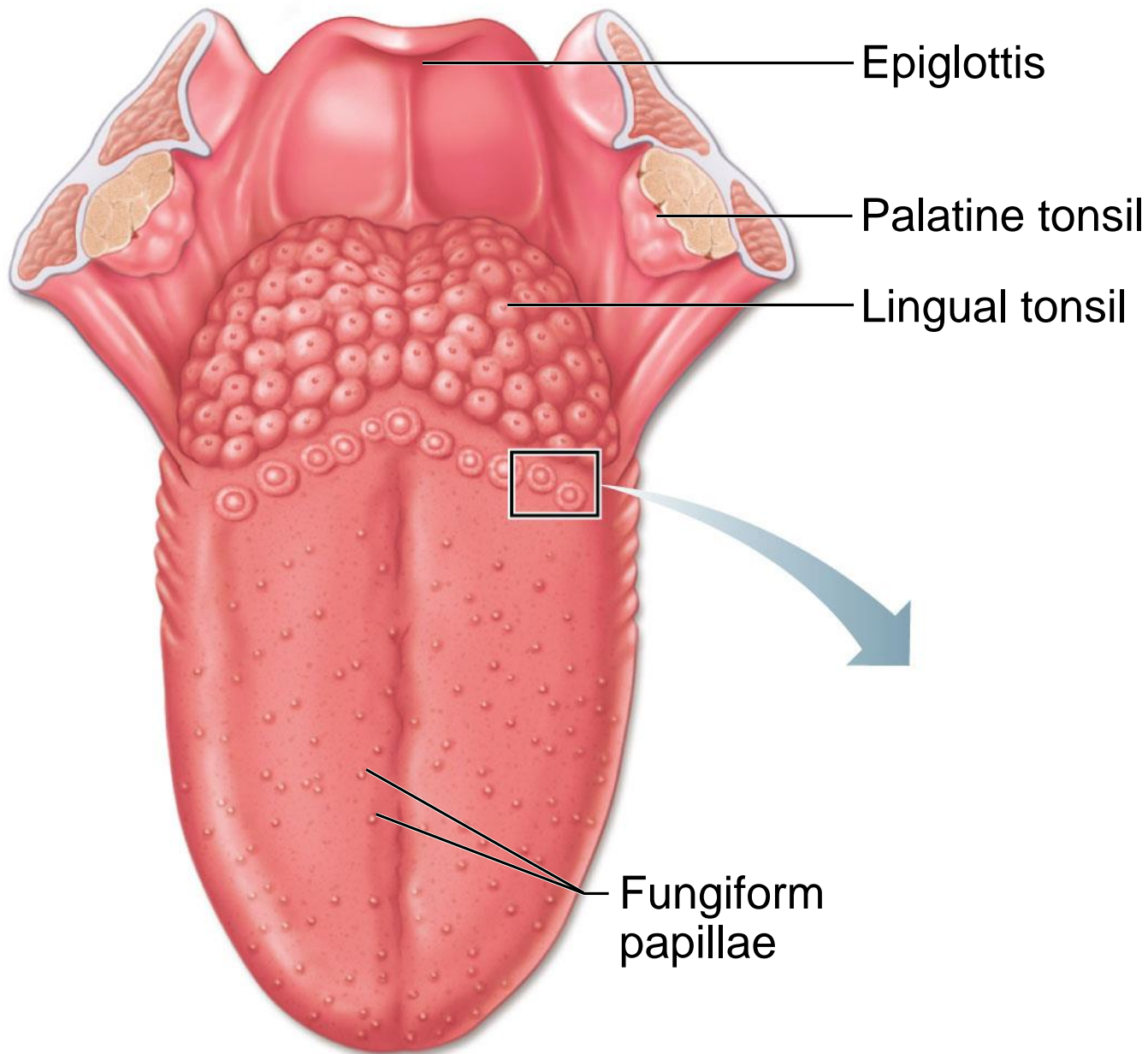


**Figure 8.18**

# **SENSE OF TASTE**

## (4) The Sense of Taste

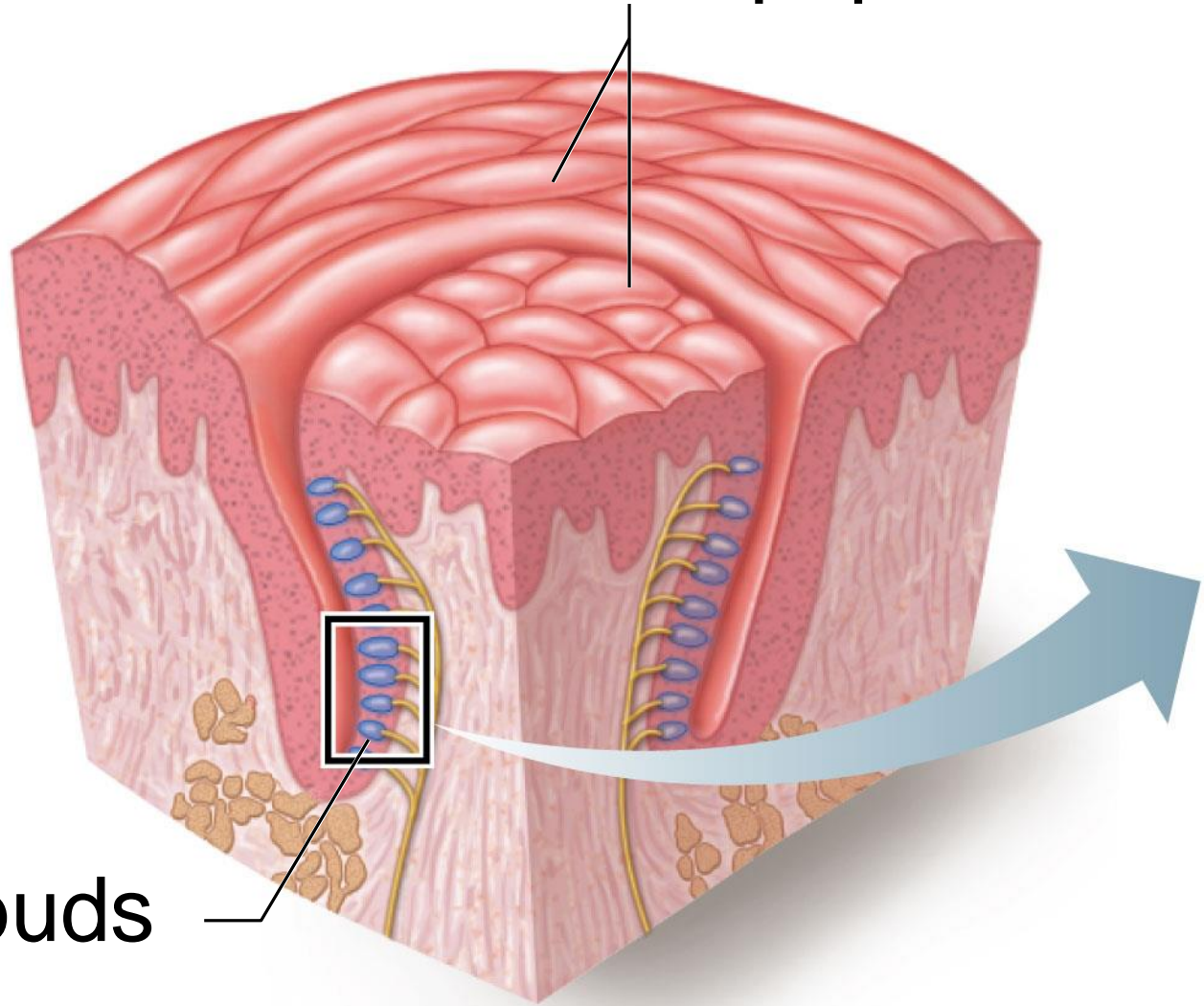
- Taste buds house the receptor organs
- Location of taste buds
  - Most are on the tongue
  - Soft palate
  - Cheeks



(a)



Circumvallate papilla



Taste buds

(b)

Figure 8.19b



# 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

# Structure of Taste Buds

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

# 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

# Taste Sensations

- Sweet receptors (sugars)
  - Saccharine
  - Some amino acids
- Sour receptors
  - Acids
- Bitter receptors
  - Alkaloids
- Salty receptors
  - Metal ions

# Developmental Aspects of the Special Senses

- Formed early in embryonic development
- Eyes are outgrowths of the brain
- All special senses are functional at birth

# Chemical Senses: Taste and Smell

- Both senses use **chemoreceptors**
  - Stimulated by chemicals in solution
  - Taste has four types of receptors
  - Smell can differentiate a large range of chemicals
- Both senses complement each other and respond to many of the same stimuli

# **Read Pages 300 – 302 and Do Page 170 #23**

**(may need to use diagrams to answer some questions)**

- |                        |              |
|------------------------|--------------|
| 1. VII Facial          | 10. Sweet    |
| 2. IX Glossopharyngeal | 11. Salty    |
| 3. X Vagus             | 12. Bitter   |
| 4. I Olfactory         | 13. Sour     |
| 5. Mucosa of the roof  | 14. Unami    |
| 6. Sniffing            | 15. Bitter   |
| 7. Taste Buds          | 16. Smell    |
| 8. Fungiform           | 17. Dry      |
| 9. Circumvallate       | 18. Memories |