

14

PART A

The Digestive System and Body Metabolism

PowerPoint® Lecture Slide Presentation by Jerry L. Cook, Sam Houston University



ESSENTIALS OF HUMAN ANATOMY & PHYSIOLOGY

EIGHTH EDITION

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The Digestive System and Body Metabolism

- Digestion
 - Breakdown of ingested food
 - Absorption of nutrients into the blood
- Metabolism
 - Production of cellular energy (ATP)
 - Constructive and degradative cellular activities

Organs of the Digestive System

- Two main groups
 - Alimentary canal – continuous coiled hollow tube
 - Accessory digestive organs

Organs of the Digestive System

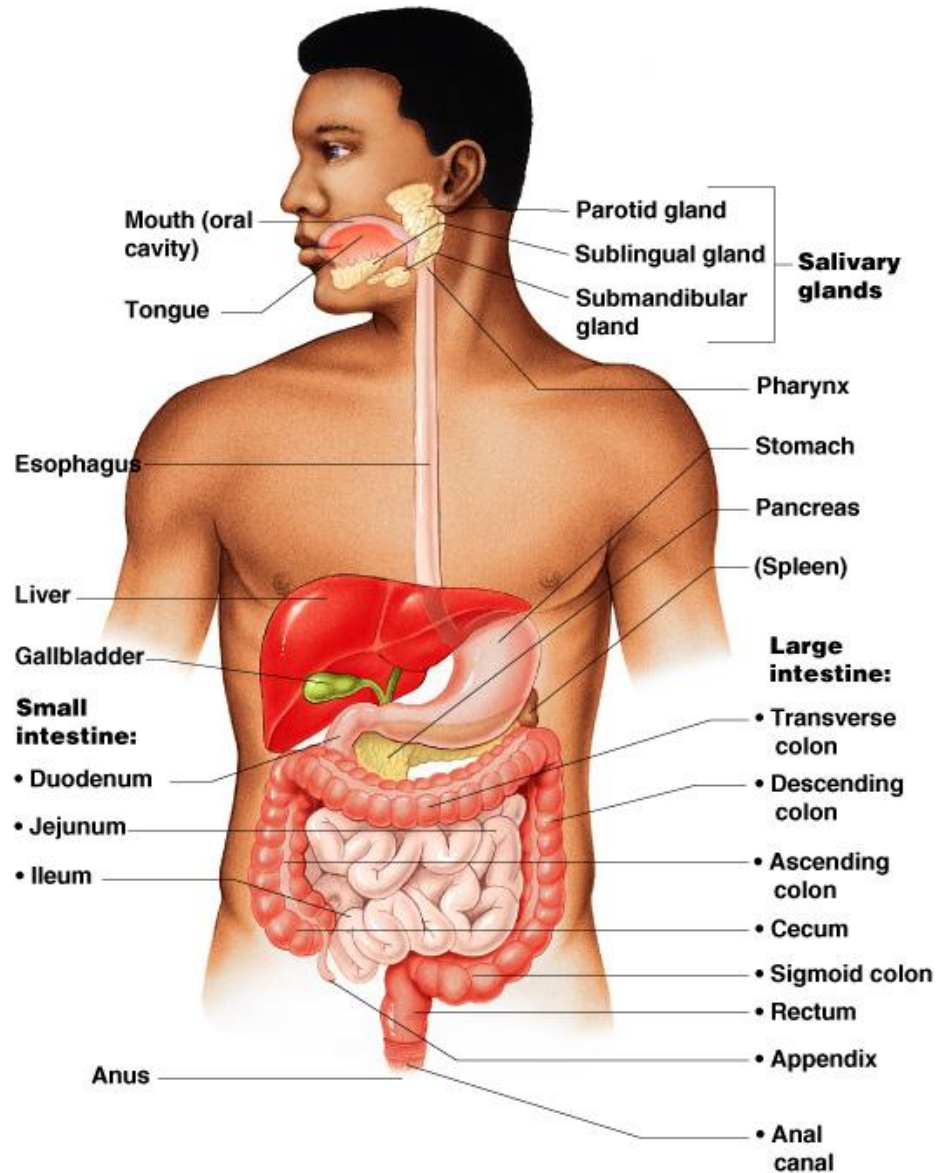


Figure 14.1

Organs of the Alimentary Canal

- Mouth
- Pharynx
- Esophagus
- Stomach
- Small intestine
- Large intestine
- Anus

Mouth (Oral Cavity) Anatomy

- Lips (labia) – protect the anterior opening
- Cheeks – form the lateral walls
- Hard palate – forms the anterior roof
- Soft palate – forms the posterior roof
- Uvula – fleshy projection of the soft palate

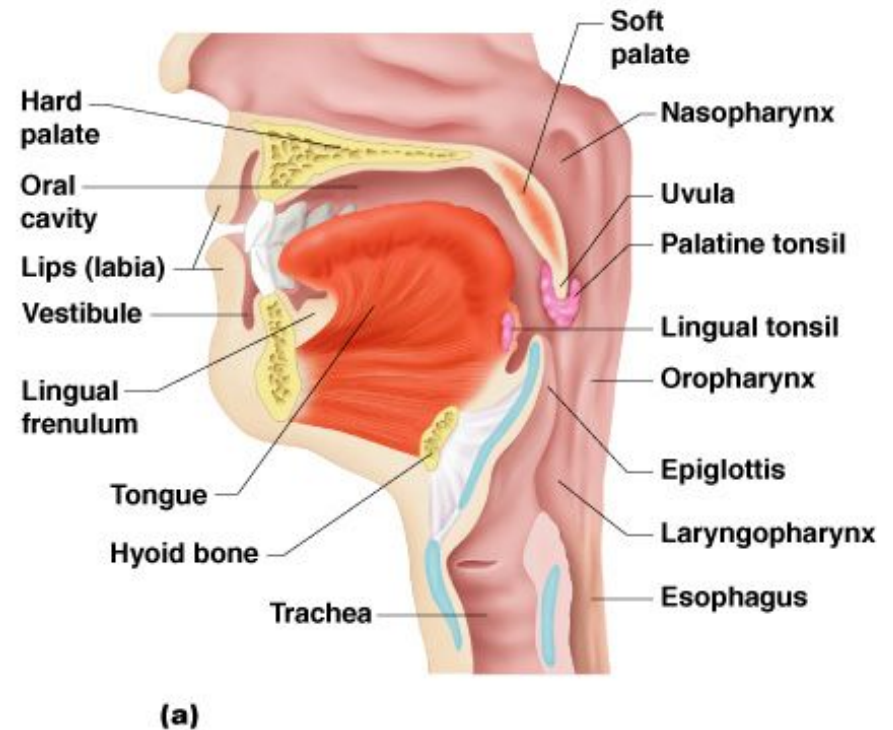


Figure 14.2a

Mouth (Oral Cavity) Anatomy

- Vestibule – space between lips externally and teeth and gums internally
- Oral cavity – area contained by the teeth
- Tongue – attached at hyoid and styloid processes of the skull, and by the lingual frenulum

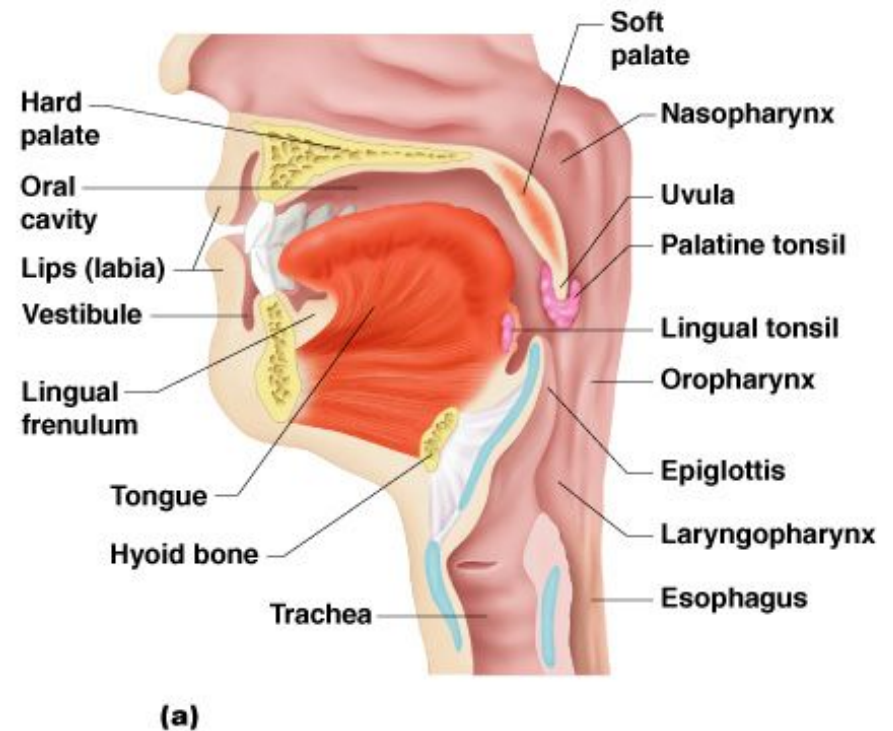


Figure 14.2a

Mouth (Oral Cavity) Anatomy

- Tonsils
 - Palatine tonsils
 - Lingual tonsil

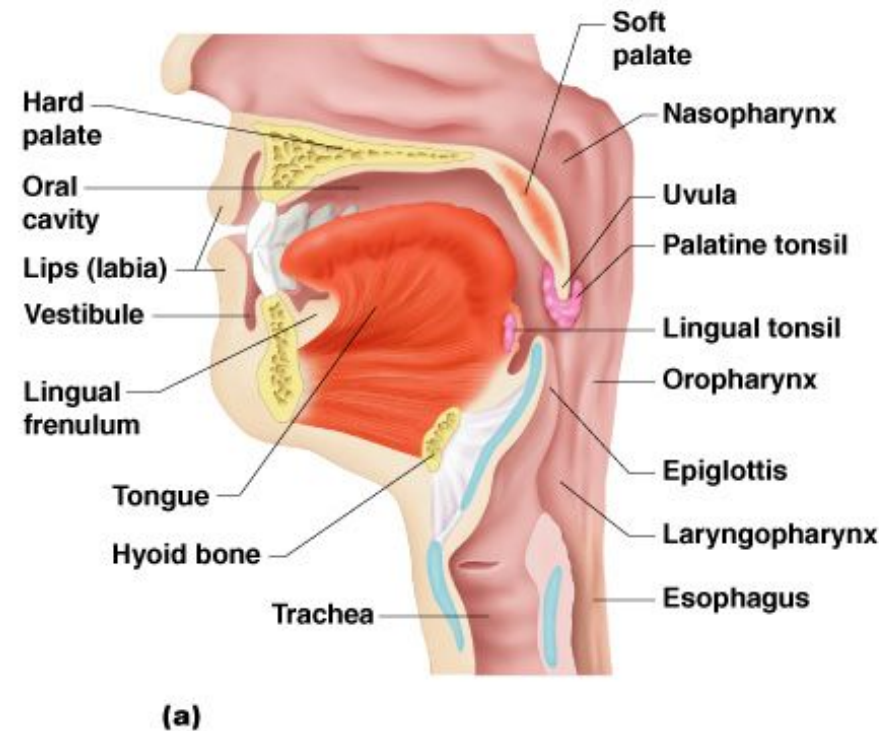


Figure 14.2a

Processes of the Mouth

- Mastication (chewing) of food
- Mixing masticated food with saliva
- Initiation of swallowing by the tongue
- Allowing for the sense of taste

Pharynx Anatomy

- Nasopharynx – not part of the digestive system
- Oropharynx – posterior to oral cavity
- Laryngopharynx – below the oropharynx and connected to the esophagus

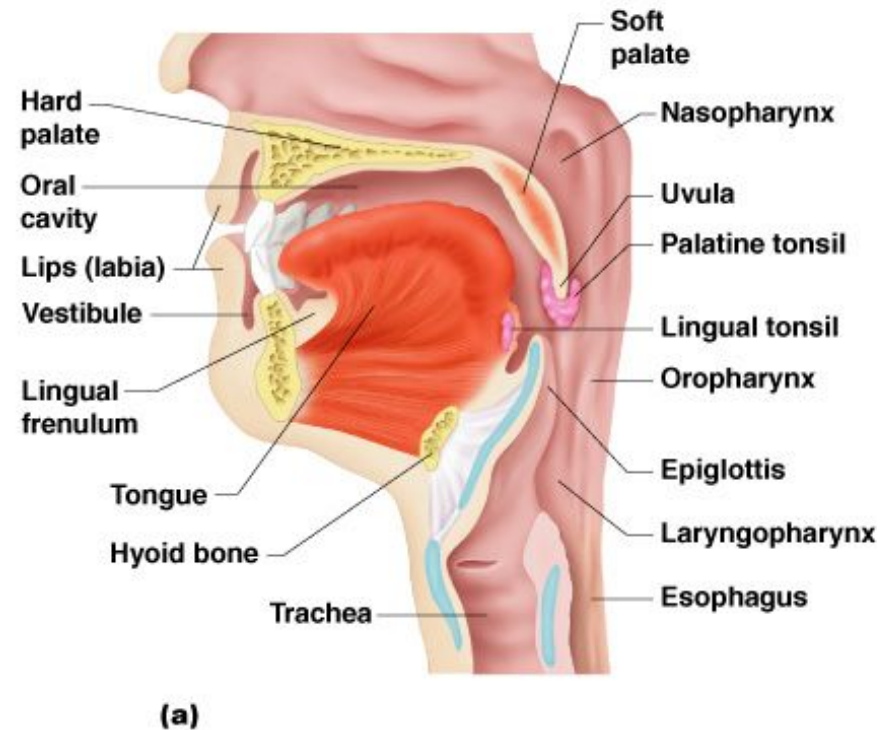


Figure 14.2a

Pharynx Function

- Serves as a passageway for air and food
- Food is propelled to the esophagus by two muscle layers
 - Longitudinal inner layer
 - Circular outer layer
- Food movement is by alternating contractions of the muscle layers (peristalsis)

Esophagus

- Runs from pharynx to stomach through the diaphragm
- Conducts food by peristalsis (slow rhythmic squeezing)
- Passageway for food only (respiratory system branches off after the pharynx)

Layers of Alimentary Canal Organs

- Mucosa
 - Innermost layer
 - Moist membrane
 - Surface epithelium
 - Small amount of connective tissue (lamina propria)
 - Small smooth muscle layer

Layers of Alimentary Canal Organs

- Submucosa
 - Just beneath the mucosa
 - Soft connective tissue with blood vessels, nerve endings, and lymphatics

Layers of Alimentary Canal Organs

- Muscularis externa – smooth muscle
 - Inner circular layer
 - Outer longitudinal layer
- Serosa
 - Outermost layer – visceral peritoneum
 - Layer of serous fluid-producing cells

Layers of Alimentary Canal Organs

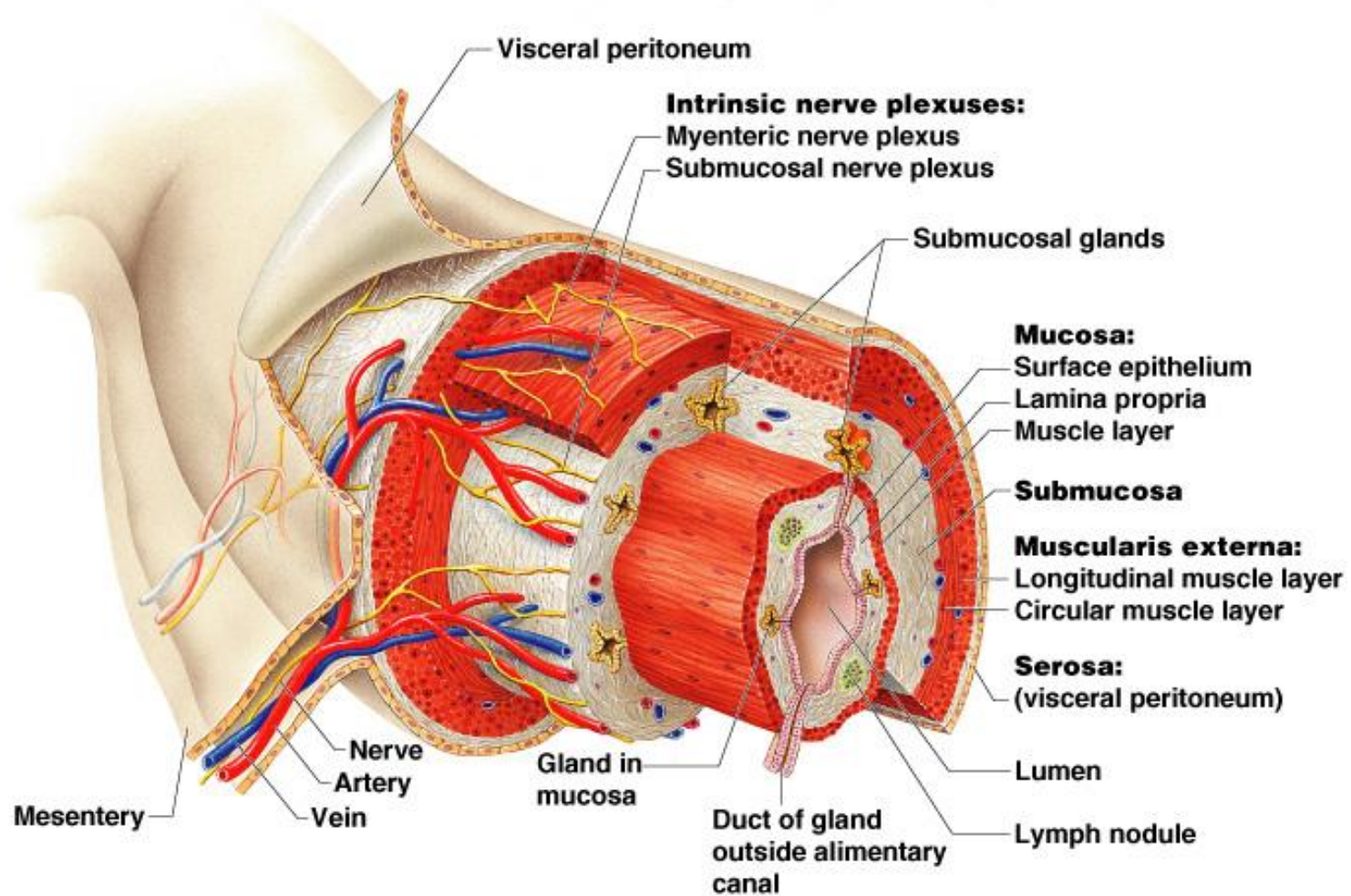


Figure 14.3

Alimentary Canal Nerve Plexuses

- All are part of the autonomic nervous system
- Three separate networks of nerve fibers
 - Submucosal nerve plexus
 - Myenteric nerve plexus
 - Subserous plexus