Trachea: conducting division
Pharynx: conducting
> movement of air in & out the lungs → Dead space: non-respiratory portion → fills up conductive parts of respiratory tract (1L → ml)

Alveolar ducts: respiratory
Respiratory bronchioles: respiratory
Alveoli: respiratory
> gas exchange: where occurs primarily: Type I pneumocytes

Alveolar air: TV - DS

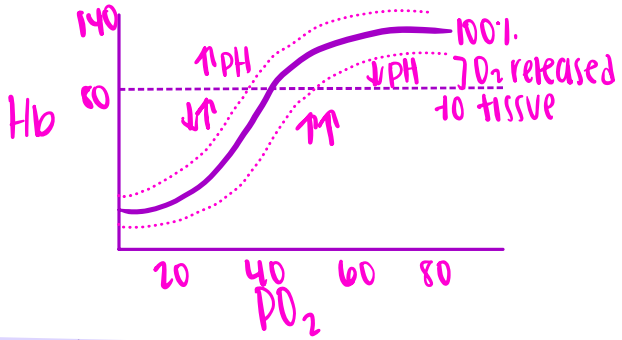
Type II pneumocytes: produce & secrete surfactant which ↓ surface tension
↳ insufficient surfactant → RDS

surfactant: ↓ surface tension inside alveoli so doesn't collapse during expiration

Dorsal & ventral respiratory group:
*represent neurons in medulla that control normal breathing
*pontine center: conscious control of breathing, prolong inspiration — in pons

Ventral respiratory group: stimulation of inspiratory neurons send impulses to muscles of inspiration

Dorsal respiratory group: stretch receptors in the lung send inhibitory impulses to dorsal group resulting in cessation of inspiration



*normal stimulus for rhythmic breathing
decreases the pH of cerebrospinal fluid

As PP of oxygen increases, the % oxygen saturation of Hb increases

As pH of blood decreases, % oxygen saturation decreases at the same PP of oxygen (shift left)

As temperature increases, % oxygen saturation of blood decreases

↓ in pH
↑ in temp
↑ in concentration
> favor the unloading of oxygen at the active muscle tissue site

Air moves into lung (saturated w/ water vapor) the partial pressure of oxygen ↓
*cell/tissue site: PP of oxygen - 40 mmHg
*arterial blood: PP of O_2 - 100 mmHg
*venous blood: PP of O_2 - 40 mmHg

segmentation movement: alternate constriction & dilation of smooth muscle in NONADJACENT areas - used to mix food chyme of digestive tract

peristaltic movement: alternate constriction & dilation of ADJACENT areas - rhythmic, wave-like contractions used to propel the contents

pendular movement: alternate contraction & relaxation of muscles on opposite sides of the intestine - intestine swings back & forth

crypts of Lieberkuhn: indentations between intestinal villi - secretes intestinal juice

plicae circularis: deep, permanent folds of intestinal mucosa aid in increasing the area for absorption

Teniae coli: taut, ligamentous band traversing lg intestine

Acidic, fatty chyme entering duodenum causes release of secretin & cholecystokinin from the intestinal wall

Hepatic portal vein: blood containing nutrients from the small intestine is brought to liver via

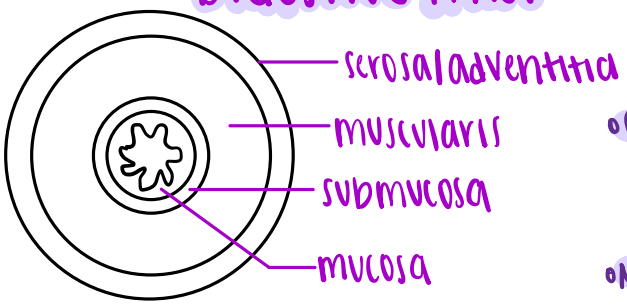
Hepatic artery: carries blood containing oxygen from ventral aorta to liver

cystic duct: duct carrying the bile connecting gall bladder to common bile/hepatic duct

secretin: stimulates liver to produce & secrete bile, stimulates secretion of bicarbonate-rich (acid chyme) pancreatic juice

cholecystokinin: causes contraction of the gall bladder & relaxation of sphincter of Oddi - stimulates secretion of enzyme-rich (fatty protein-rich chyme) pancreatic juice

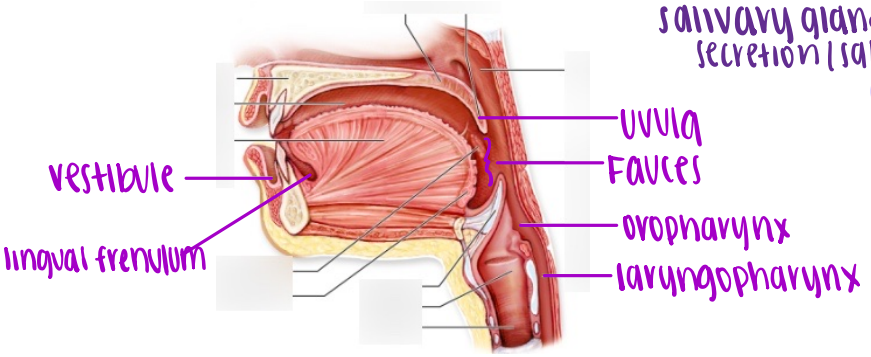
LAYERS OF DIGESTIVE TRACT



- **serosa**: outer layer of alimentary canal
- **muscularis**:
  - **Auerbach's plexus**: network of autonomic nerves in muscularis, control activity of muscle
  - **circular muscles**: inner layer of muscularis; contract: ↓ diameter + shortening of digestive tract
- **submucosa**: dense, fibrous connective tissue
  - **Meisner's plexus**: network of autonomic nerves in submucosa
  - **Brunner glands**: located in submucosa of duodenum - produce bicarbonates used to neutralize acid chyme from stomach
- **MUCOSA**: innermost layer; composed of 3 sublayers: epithelium, lamina propria, mucosa muscularis
  - **stratified squamous**: epithelium that composes the mucosa of oral cavity, pharynx, esophagus, + rectum
  - **simple columnar**: epithelium that composes the mucosa of stomach + intestine

salivary glands (accessory digestive organs) release their secretion (saliva) into oral cavity

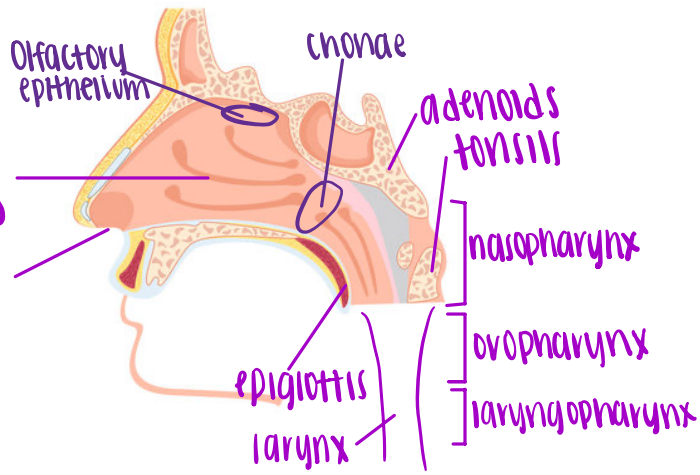
ORAL CAVITY



- **fauces**: opening between the oral cavity + pharynx
- **lingual frenulum**: what attaches the tongue to the floor of the oral cavity
- **uvula**: structure that prevents fluids from entering the nasopharynx during swallowing
- **vestibule**: area between the lips + gums/teeth

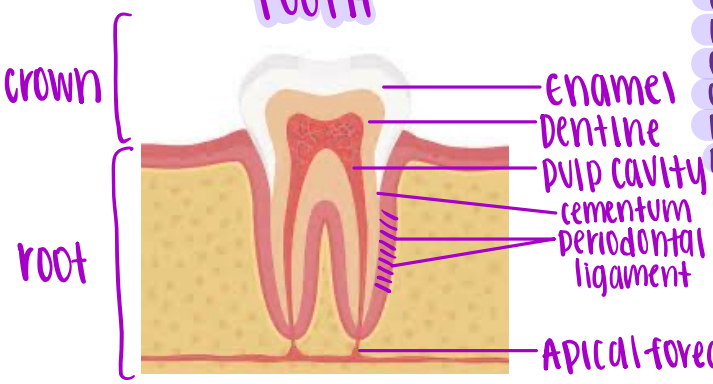
NASAL

- **Proboscis**: another name for nose
- **External naves**: nostrils, the openings into the nasal cavity which are surrounded by vibrissae — stiffened hairs which guard the entrance
- **conchae**: curved bones that project medially into the nasal cavity; seperate nasal passageways
- **choanae**: the opening between the nasal passageways + the nasopharynx
- **olfactory epithelium**: located in upper nasal passageways
- **Adenoids**: the nasopharyngeal tonsils
- **Glottis**: the opening into the larynx
- **Esophagus**: behind the glottis in the mediastinum, dorsal to the trachea; prevents food from entering the larynx during swallowing
- **Epiglottis**: when swallowing the larynx is raised up so the epiglottis covers it → closes the opening
- **Larynx**: provides a "switching mechanism" for routing food/air into the proper channel voice production
  - **Thyroid cartilage**: largest larynx cartilage - Adams apple
  - **Laryngeal cartilage**: vocal folds (cords) are extensions of the laryngeal cartilage into the passageway



Rima glottis: opening between the true vocal folds

TOOTH

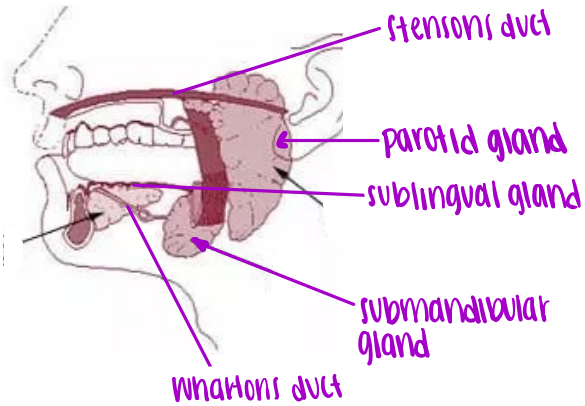


- **crown**: portion of tooth above the gum
- **root**: portion of tooth embedded in the jaw
- **enamel**: outer layer of the crown
- **cementum**: outer layer of the root
- **periodontal ligament**: anchors teeth to the bony jaw
- **pulp cavity**: filled with blood vessels, fat, tissue, + nerves
- **incisors**: cutting + slicing - front teeth
- **canines**: tearing, ripping, piercing - vampire teeth
- **bicuspid/tricuspid**: grinding/mashing - molars
- **Dental caries**: caused by acid erosion caused by bacterial decomposition of food remains

20 deciduos, baby teeth
2I.1C.2M

32 permanant teeth
2I.2C.2P.3M

SALIVARY GLANDS & DUCTS

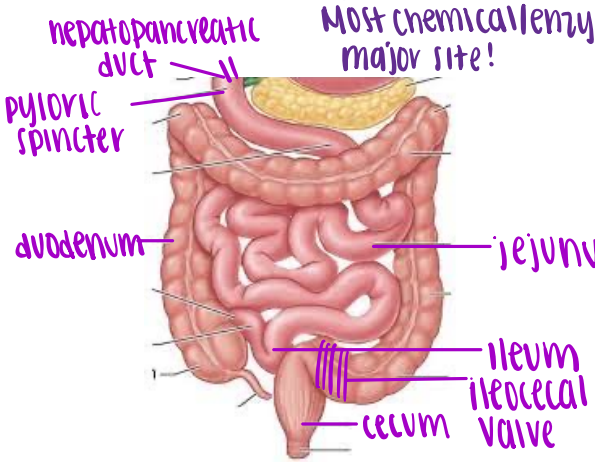


Parotid gland: salivary glands located just in front of & below the earlobe
stensons duct: empties into the roof of the mouth
sublingual gland: salivary glands located below the tongue
submandibular gland: located below the jaw
whartons duct: empty into floor of mouth

serous cell: of salivary glands - produce & secrete a watery secretion containingenzymes
mucosal cell: thick, sticky, viscous secretion - product of mucosal cells of salivary gland

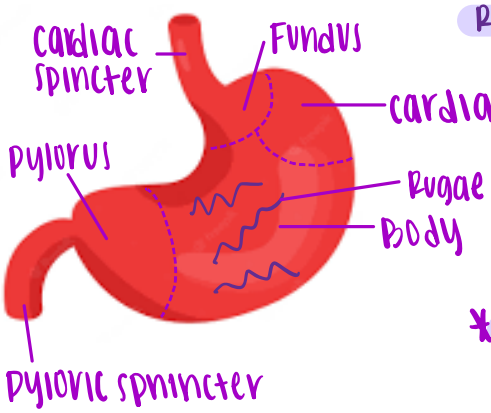
SMALL INTESTINE

Most chemical/enzymatic digestion & absorption major site!



Hepatopancreatic duct: empties into DUODENUM at the ampulla of vater
Ampulla of vater: surrounded by the sphincter of oddi; bile & pancreatic juice enter the duodenum
Duodenum: pancreas & liver empty their digestive secretions here
Jejunum: middle/top layer of small intestine
Ileum: last area of small intestine, portion that joins the large intestine
Peyers patches: located primarily in ileum
Cecum: veriform appendix is an adjunct of the cecum, blind ended portion of the large intestine
Pyloric sphincter: found between pyloric regions of the stomach & duodenum

STOMACH



Cardiac sphincter: surrounds the opening between the esophagus & cardia area of stomach
Rugae: inside of empty stomach - folds
greater curvature: lateral curvature
Lesser curvature: medial curvature
Lesser omentum: membranous connection between stomach & liver
Renin: enzyme produced in the stomach that coagulates milk protein

*__sphincters__: circular muscle - found at the junction of different regions of digestive tract

ALIMENTARY CANAL

mouth
↓
oral cavity
↓
pharynx
↓
esophagus
↓
stomach
↓
small intestine
↓
large intestine
↓
rectum
↓
anus

AIR PASSAGEWAYS - FLOW OF AIR

primary bronchi
↓
Lobar(selondary bronchi)
↓
segmental bronchi
↓
respirator bronchiole
↓
alveolar duct
↓
alveolar sac
↓
alveoli

Have a cartilage support to maintain an open air passageway: trachea, primary bronchi, selondary bronchi
Serve as a respiratory surface: primary bronchioles, alveolar duct, alveolar sacs, alveoli
Lack cartilage support but have a muscular layer: bronchioles

Ascini: produced & secreted pancreatic juice
Ascinar cells: digestive portion of pancreas - produce & secrete many of the bicarbonates released into duodenum
Bicarbonates: used to neutralize the acid chyme deposited into small intestine