The Human Body

Nutrition and Digestion

Mechanical digestion

- Chewing and grinding

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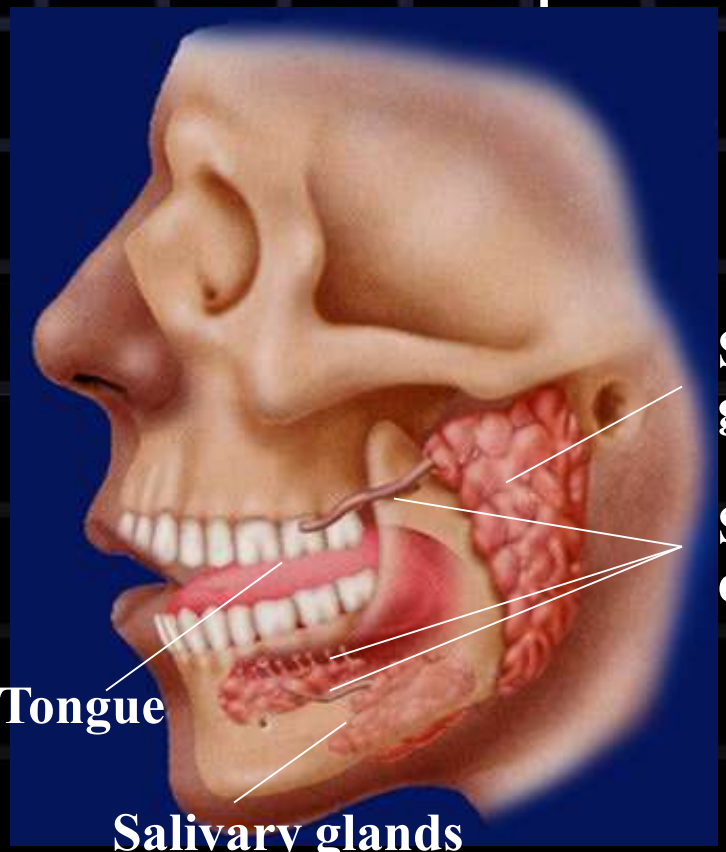
Chemical digestion

- Enzymes (proteins) speed up chemical digestion
- Enzymes are food specific



Digestive Enzymes

Organ	Enzyme	Molecules Digested	Product
Salivary glands	Salivary amylase	Starch	Disaccharide
Stomach	Pepsin	Proteins	Peptides
Pancreas	Pancreatic amylase Trypsin Pancreatic lipase Nucleases	Starch Proteins Fats Nucleic acids	Disaccharide Peptides Fatty acids and glycerol Nucleotides
Small intestine	Maltase Sucrase Lactase Peptidase Nuclease	Disaccharide Disaccharide Disaccharide Peptides Nucleotides	Monosaccharide Monosaccharide Monosaccharide Amino acids

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Digestive system

- **Mouth → Pharynx → Esophagus → Stomach → Small intestine → Large intestine → Rectum**
- Alimentary canal

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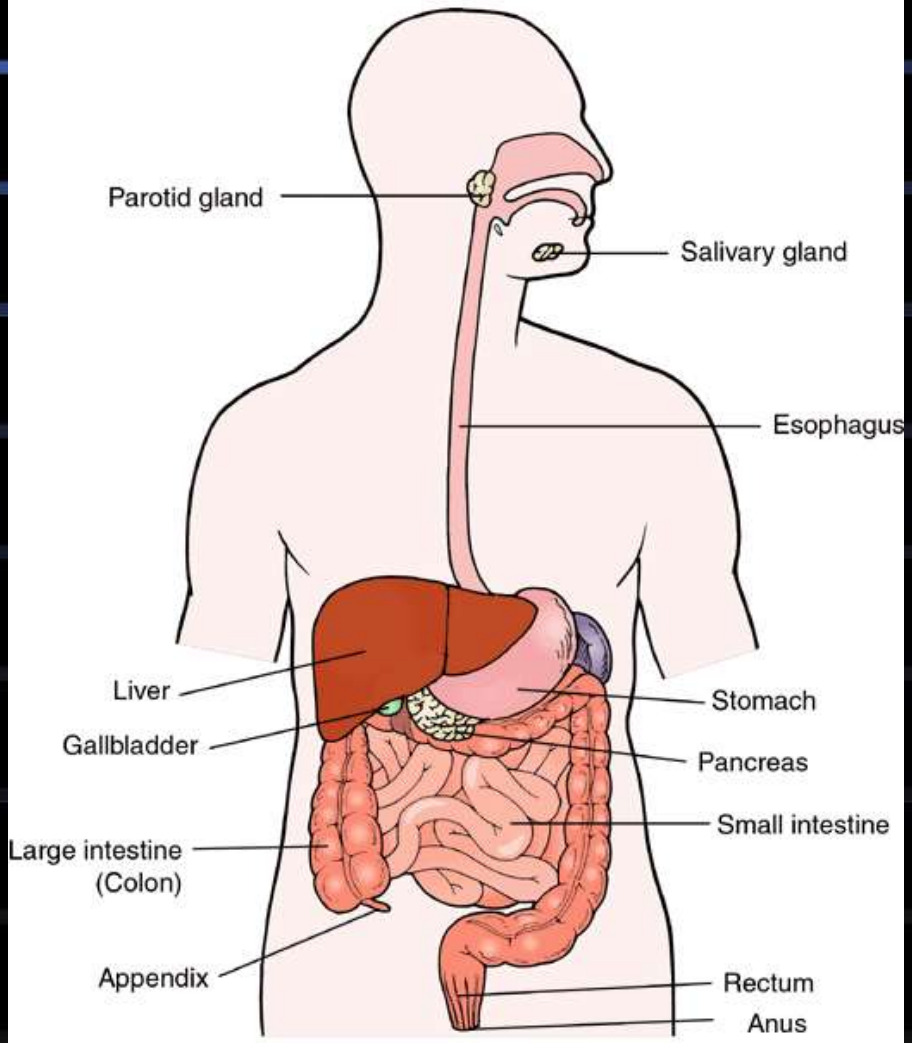
Digestive System



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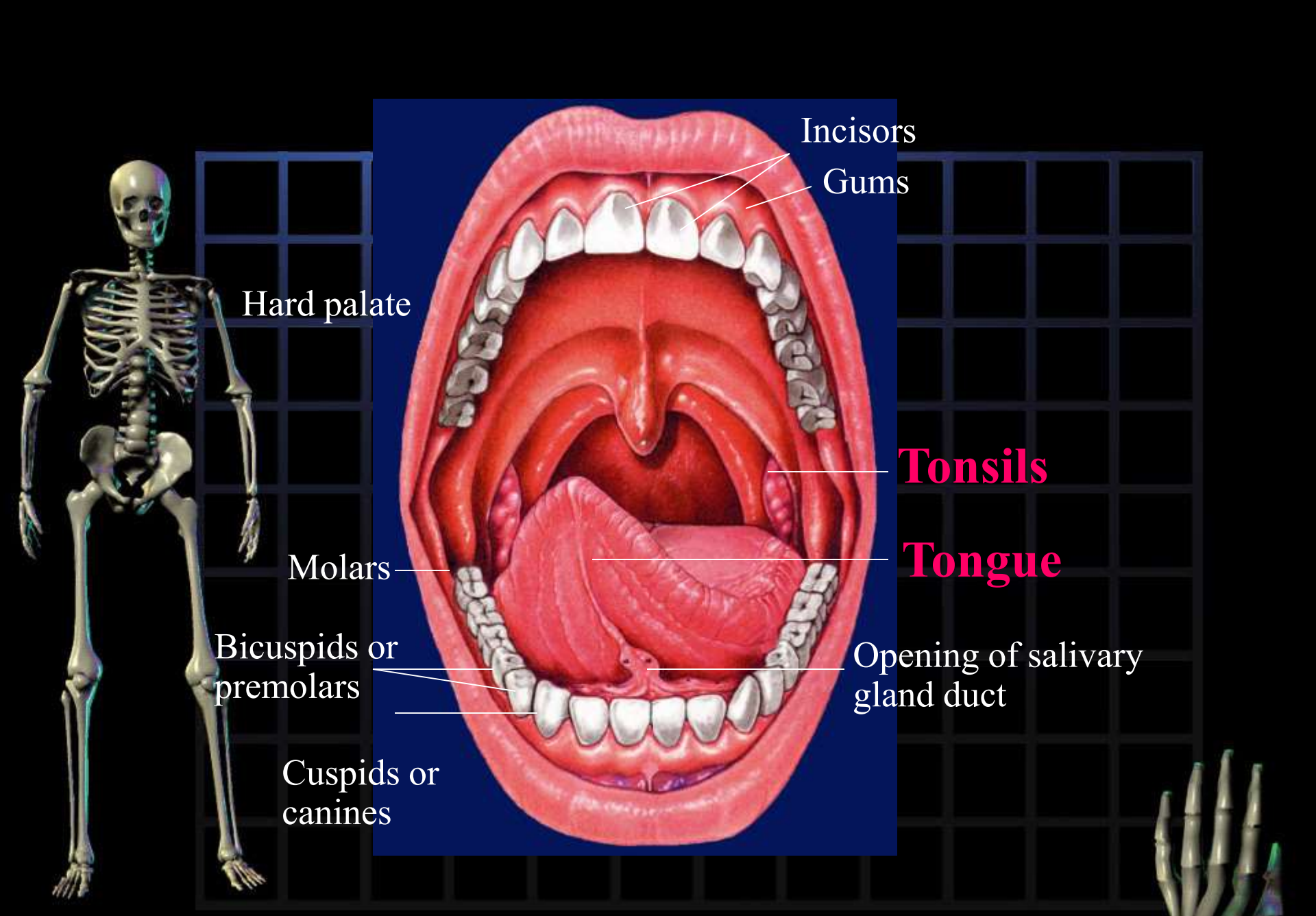

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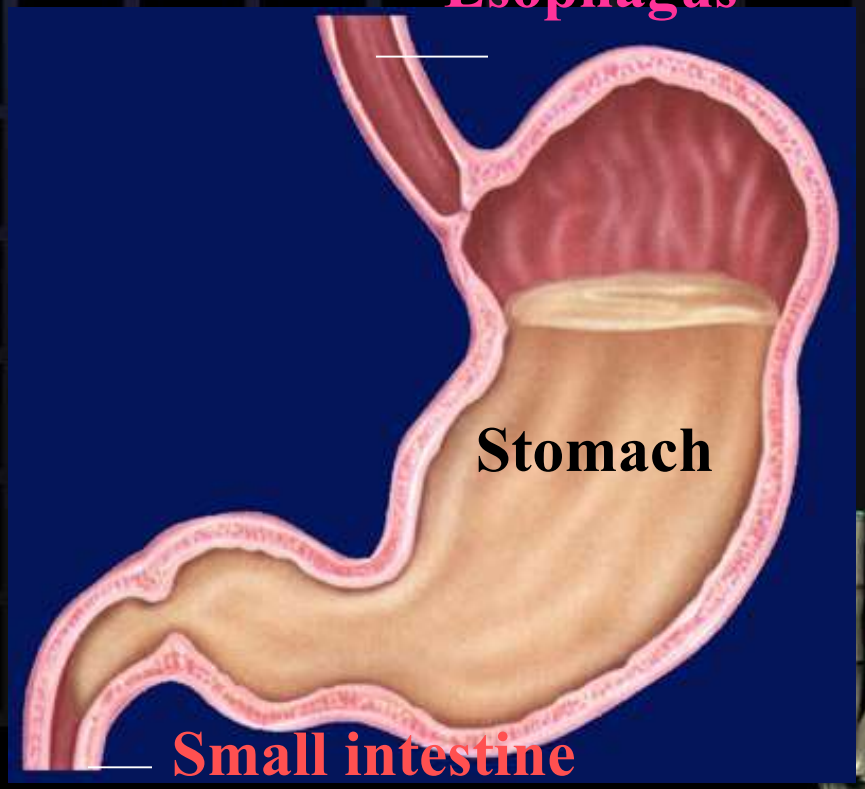
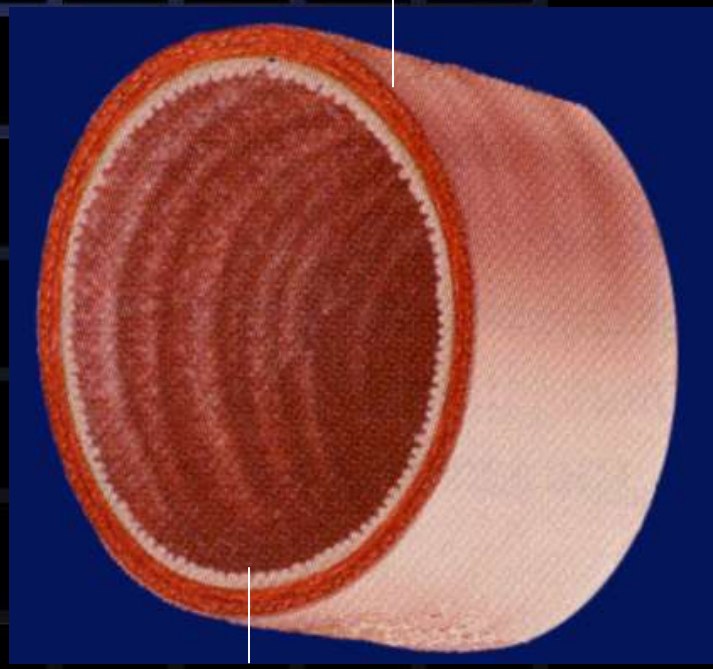
Stomach

- Mechanical and chemical digestion
- Contains hydrochloric acid with low pH (pH around 2) and pepsin



Small Intestine

- Absorption of nutrients
- Nutrients diffuse through small intestine into blood
- Villi increase surface area and efficiency



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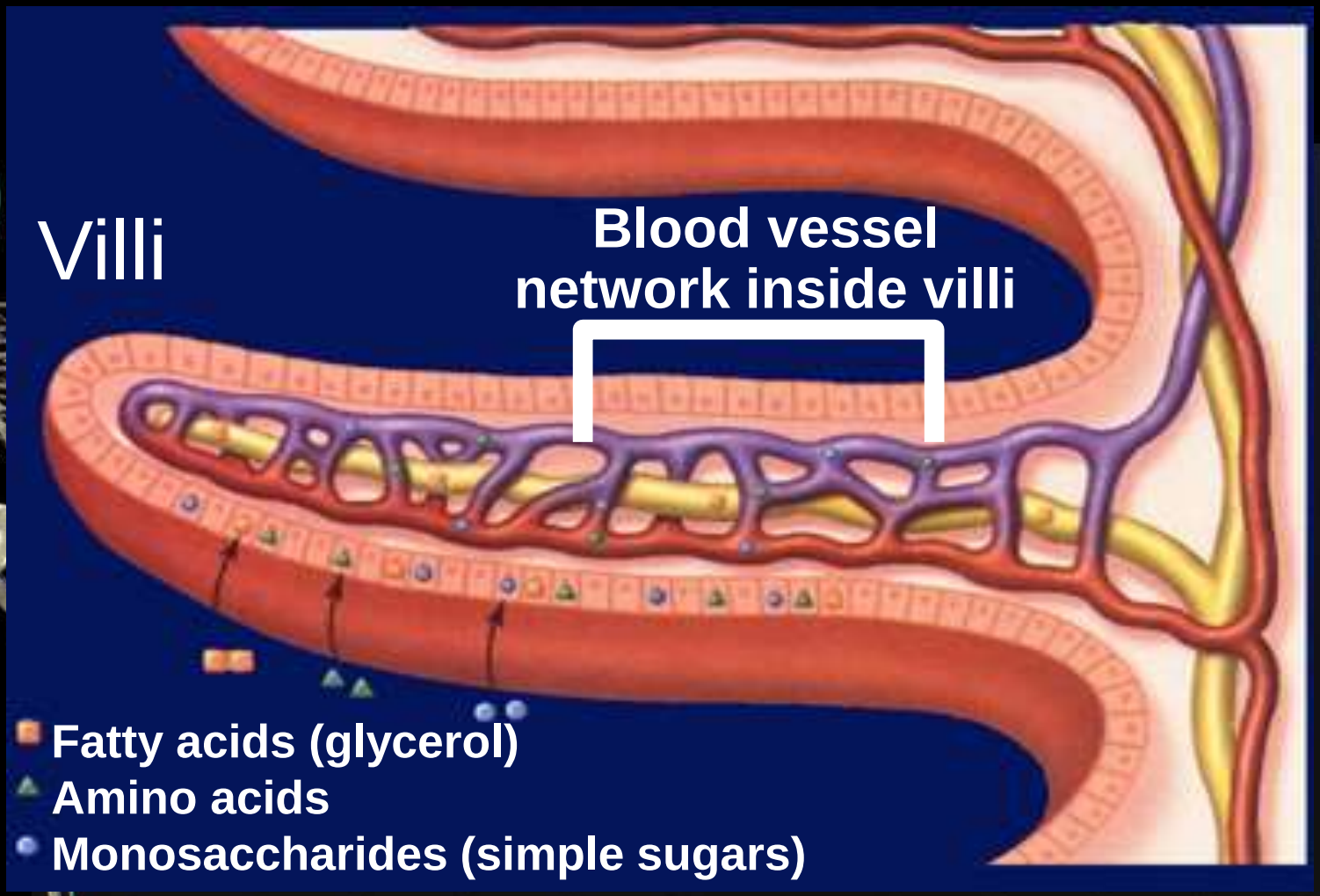

The villi are the link between the digestive system and the circulatory system.

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Large Intestine

- Absorption of water and minerals

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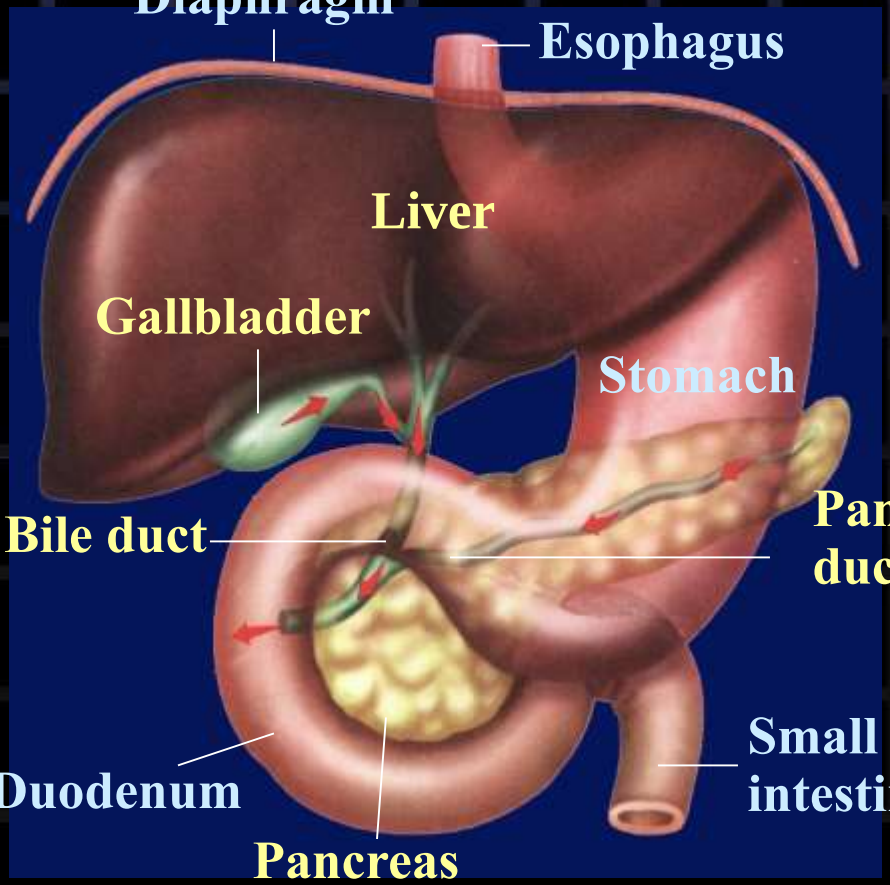
Other digestive organs

Not part of alimentary canal

- Food doesn't pass through them



Pancreas

- Produces insulin – maintains blood sugar
- Diabetics regulate their own insulin with diet or injections of insulin
- Releases digestive juices into small intestine
- Neutralize acidity of food leaving stomach

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Liver

- Produces bile to break down fats
- Gallbladder stores bile, releases into small intestine
- If gall bladder is removed, need low fat diet – bile secreted into intestine and not stored

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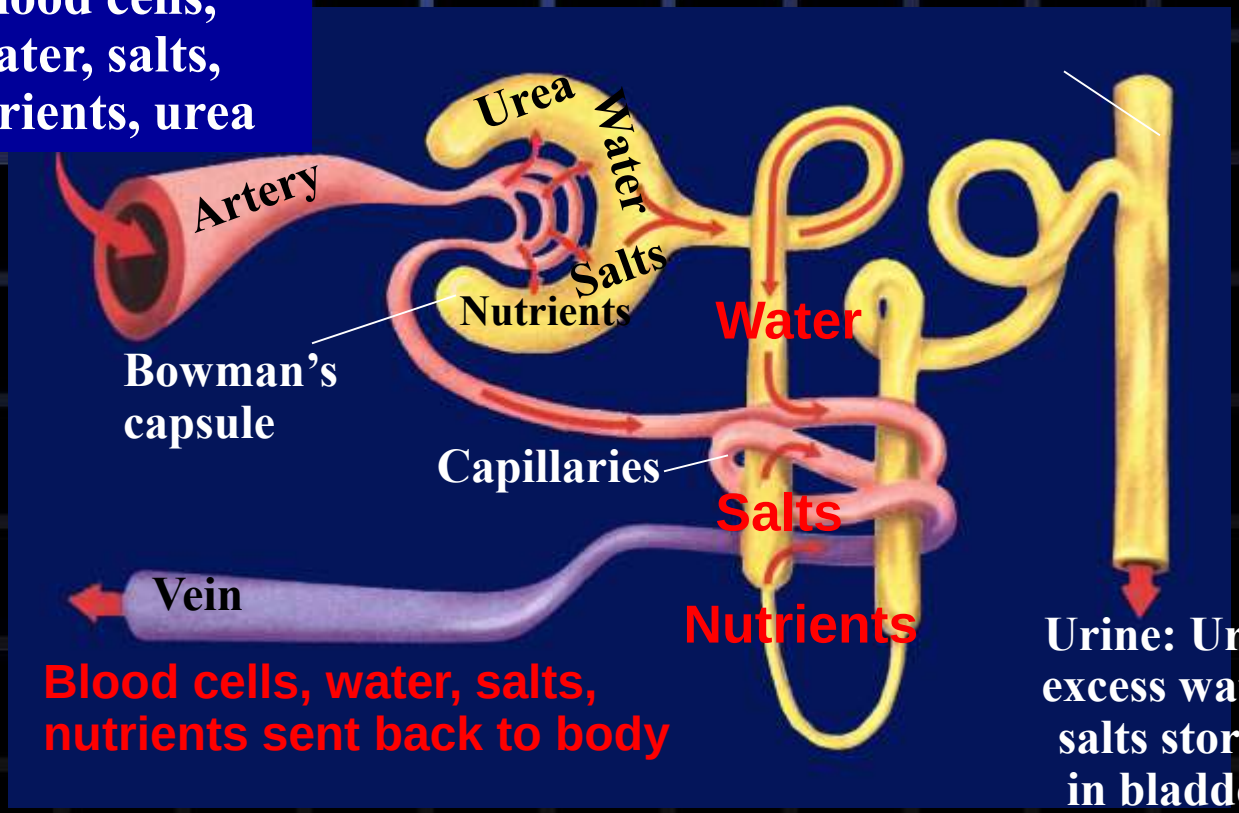
The Human Body

The Excretory System

Excretion

- Removal of waste products
- Lungs, kidneys, skin

Kidneys filter blood (remove urea and nitrogen compounds, excess salts and water)



Nephron of Kidney

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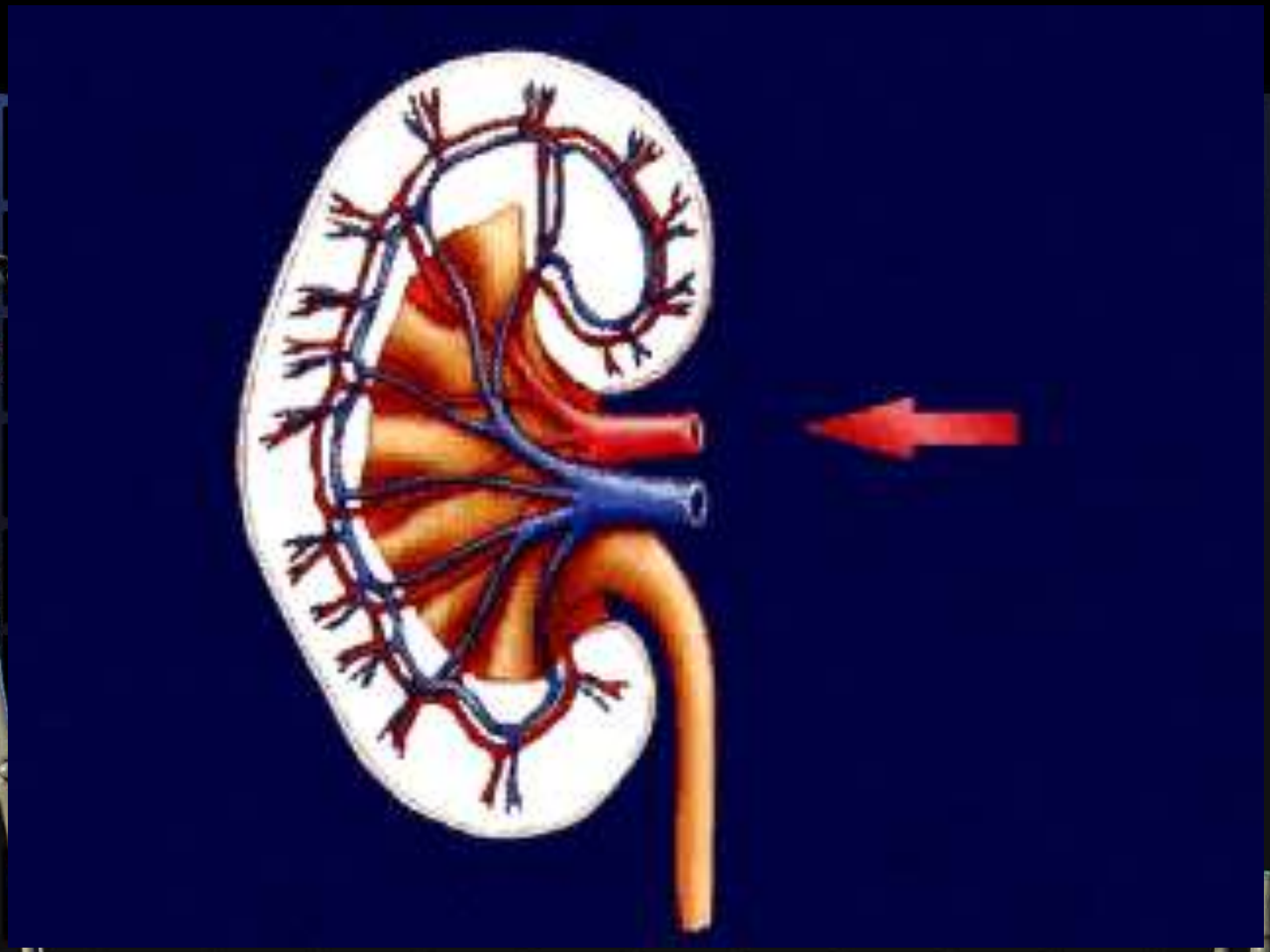

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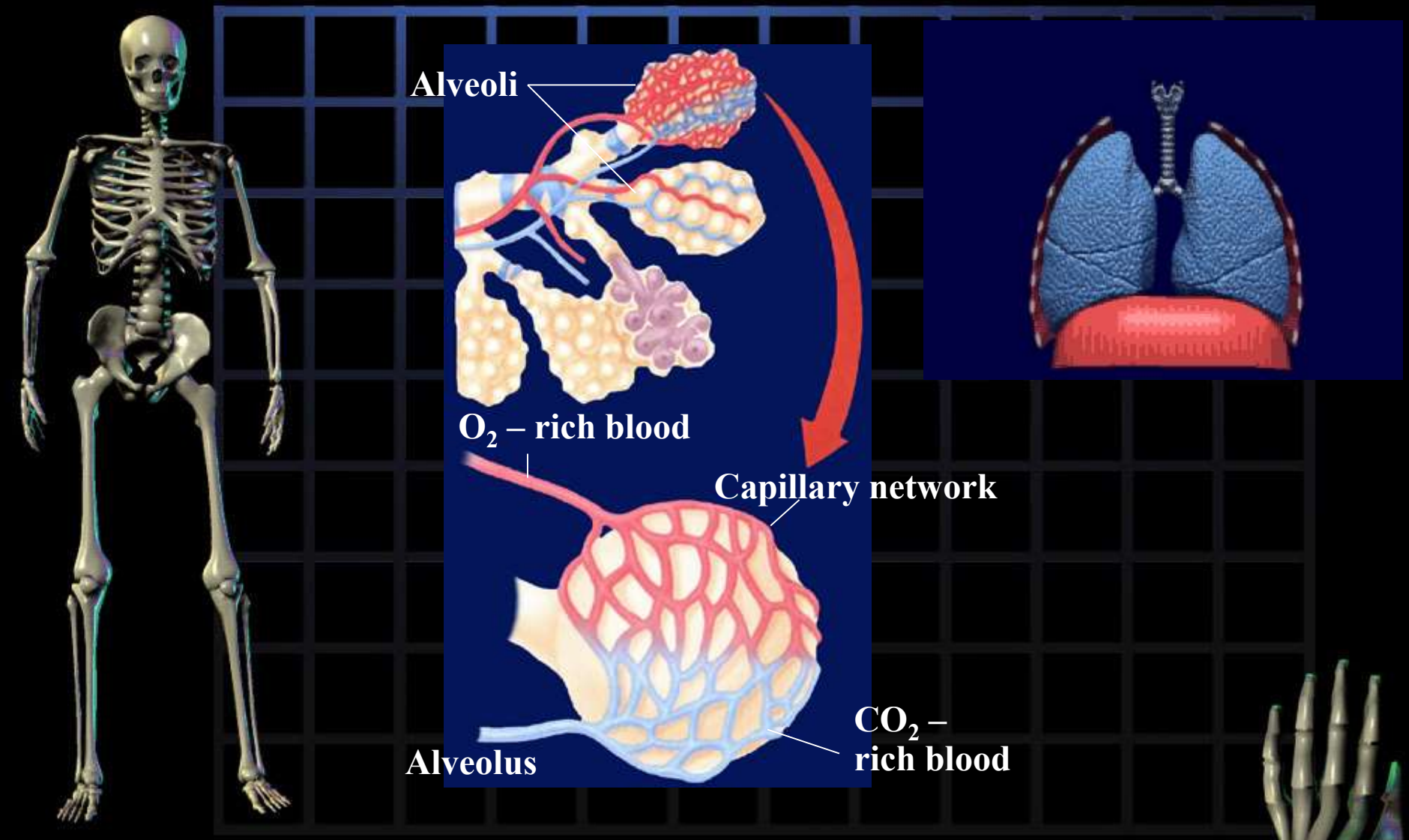
Lungs remove carbon dioxide and water



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Skin removes urea with sweat