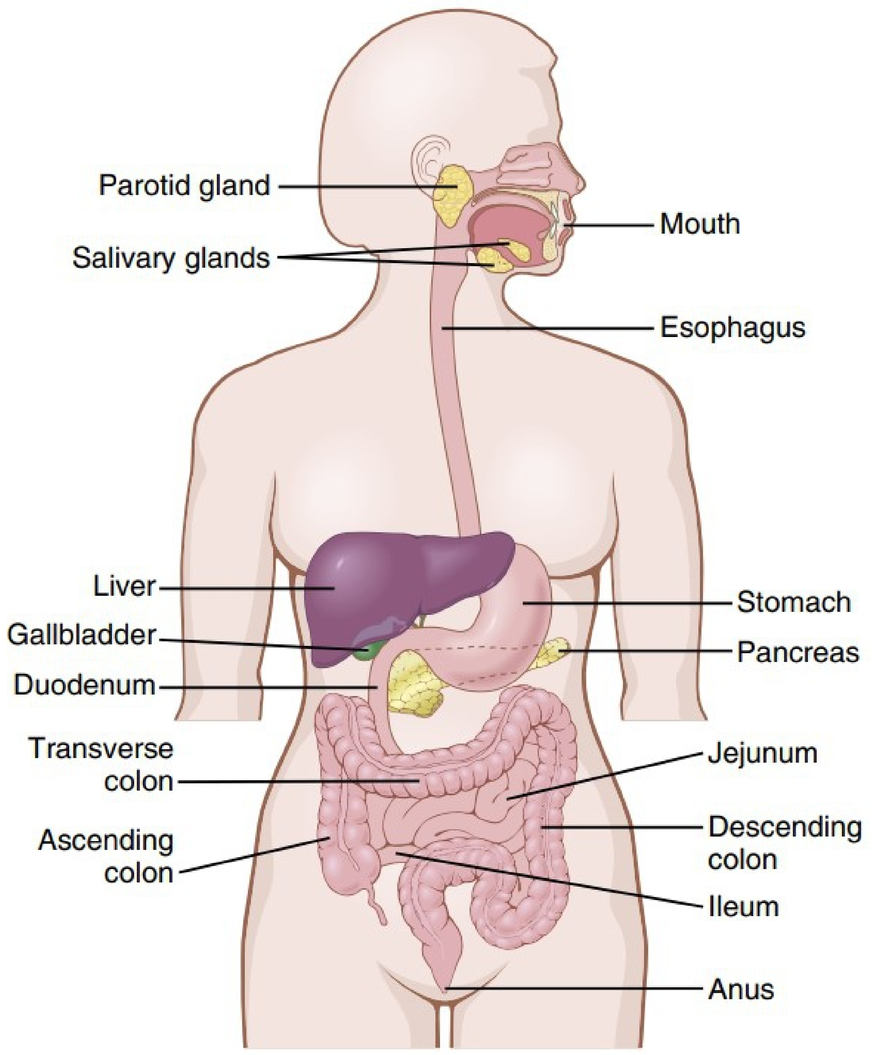
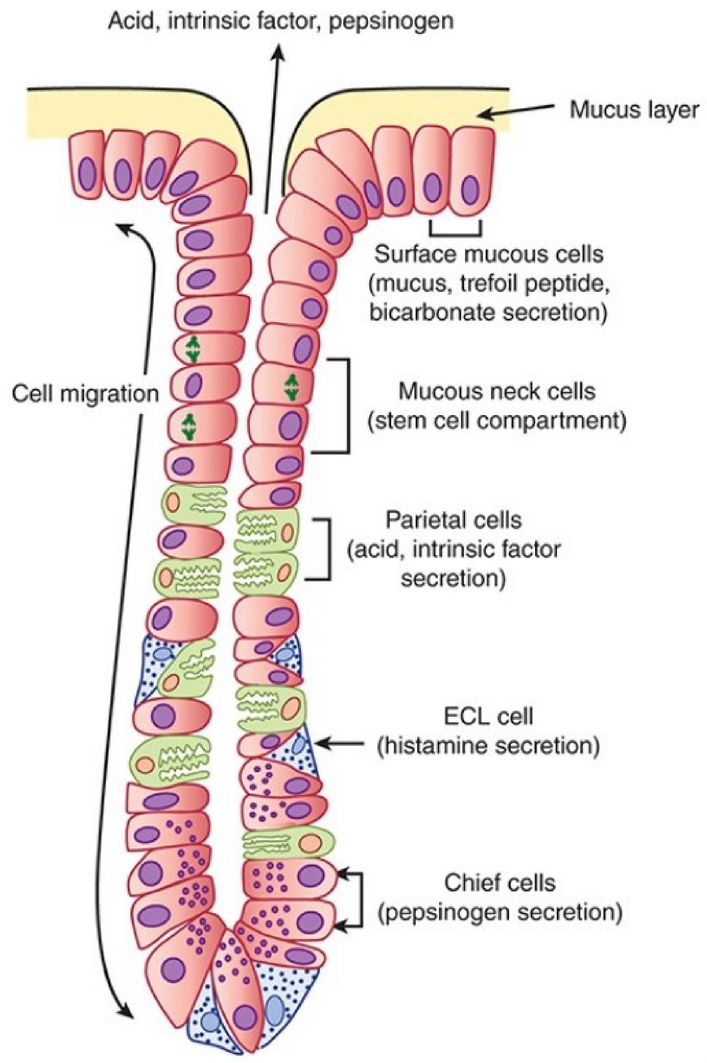
Mind Map on Gastrointestinal tract and Digestion

Physiological anatomy of gastrointestinal tract

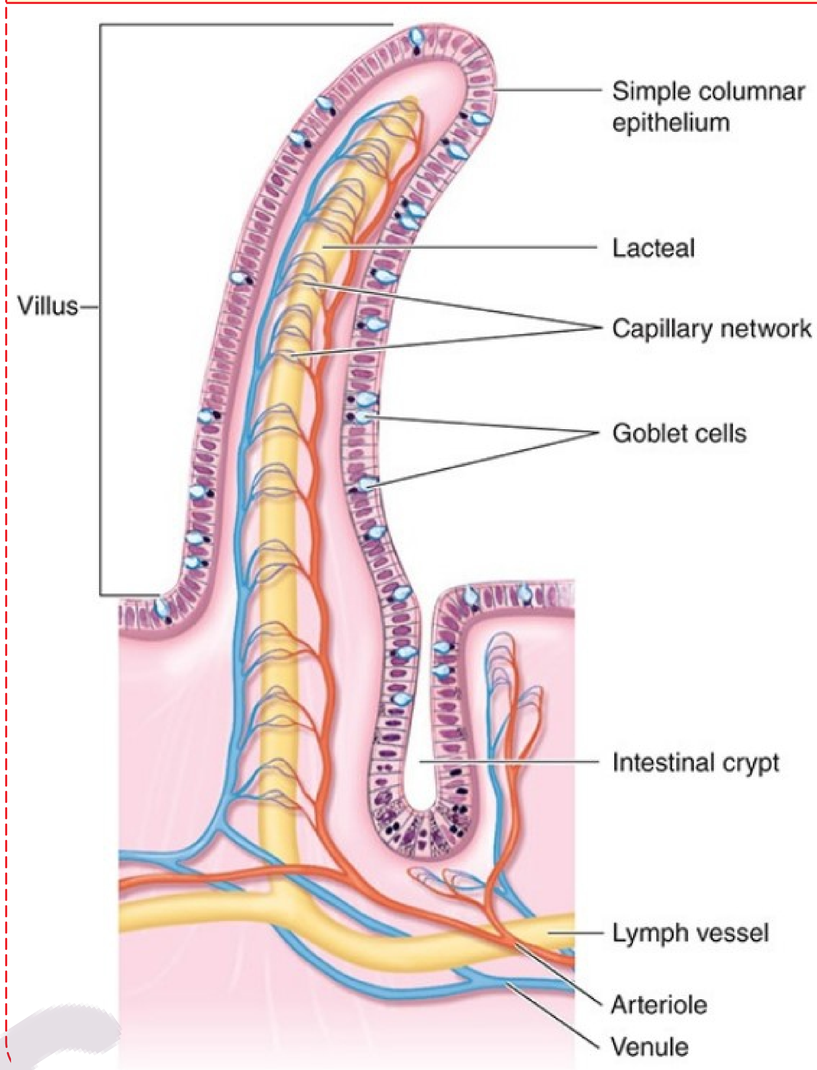
Anatomy of gastrointestinal system



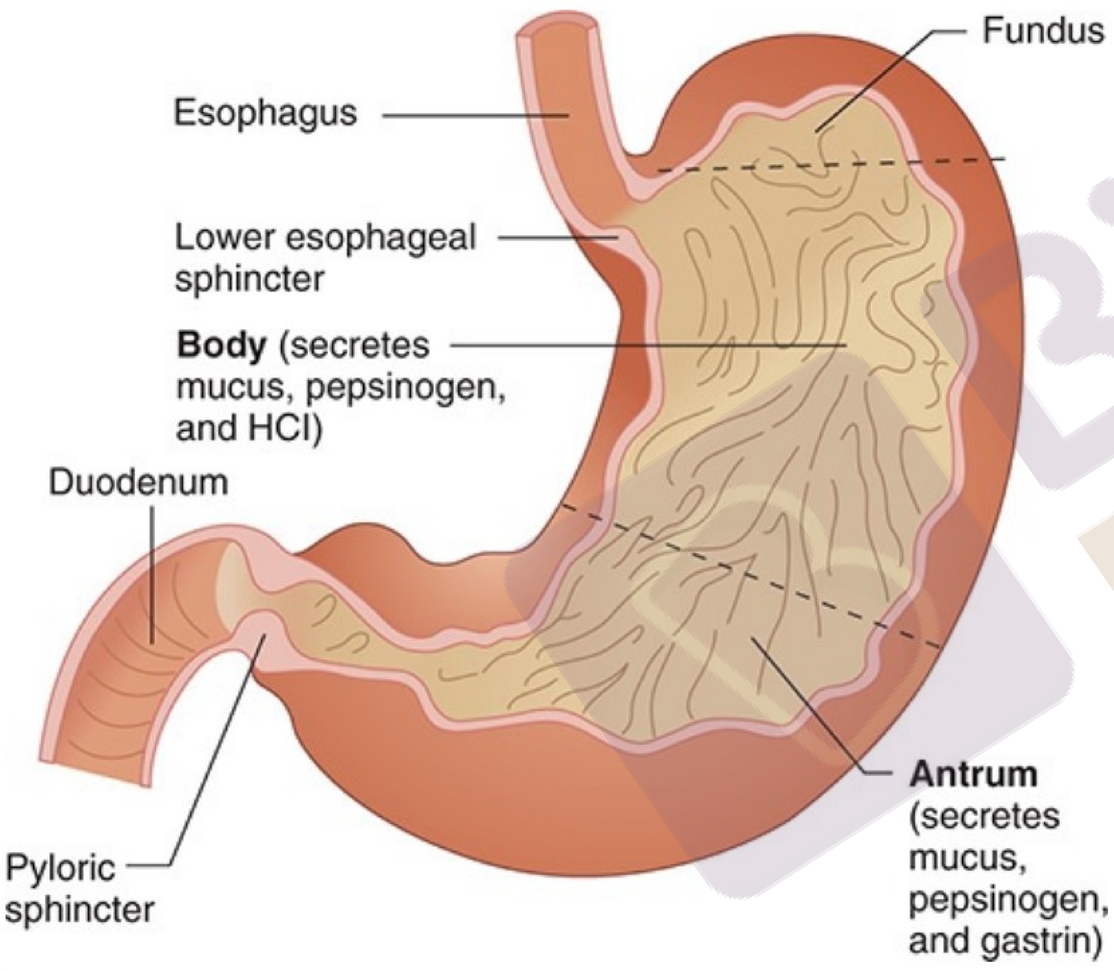
Structure of a gastric gland from the body of the stomach i.e. fundus



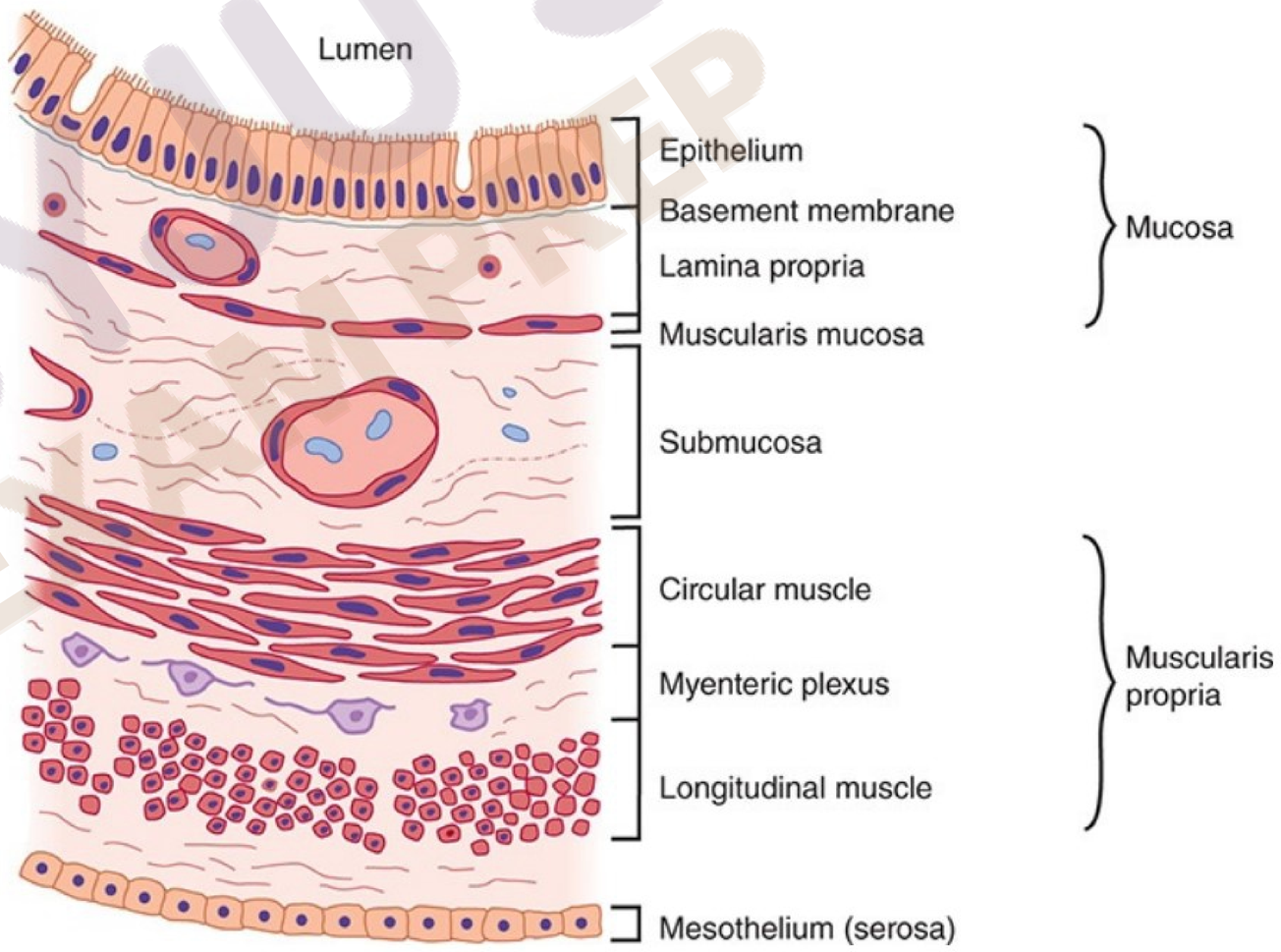
Ultrastructure of intestinal villi and crypts



Anatomy of stomach

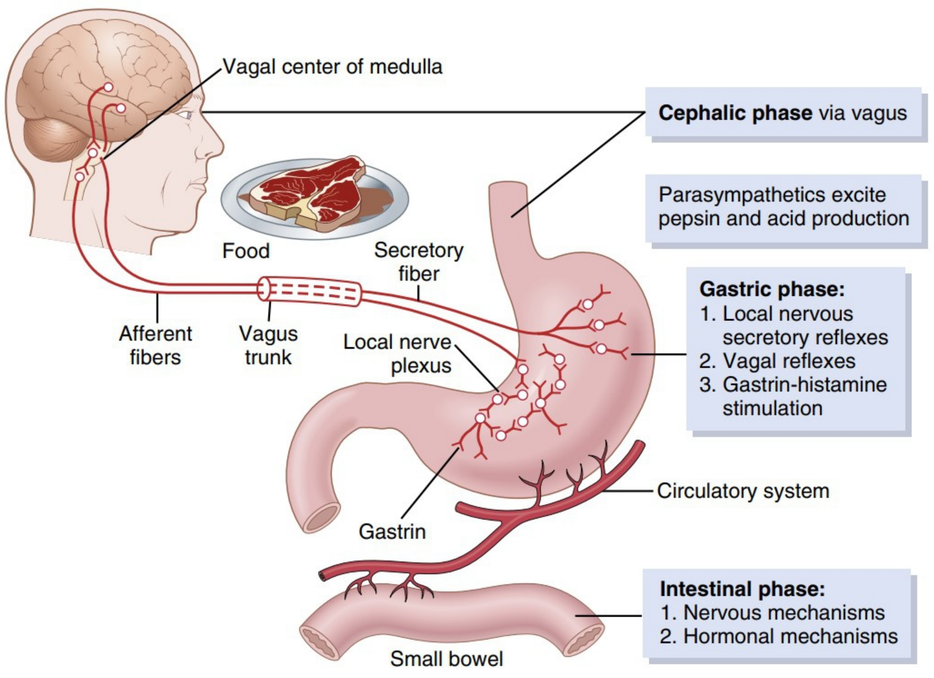


Histological organization of the wall of the intestine into functional layers

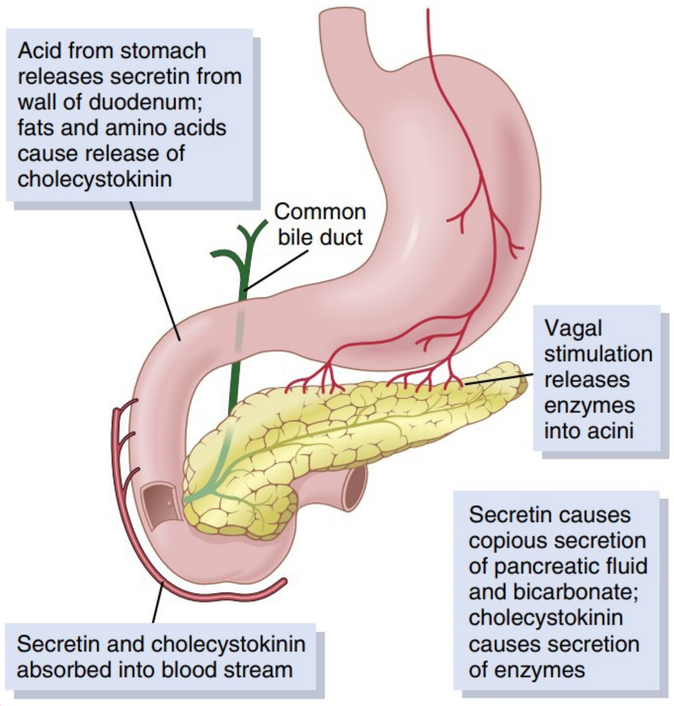


Secretory functions of the Alimentary tract

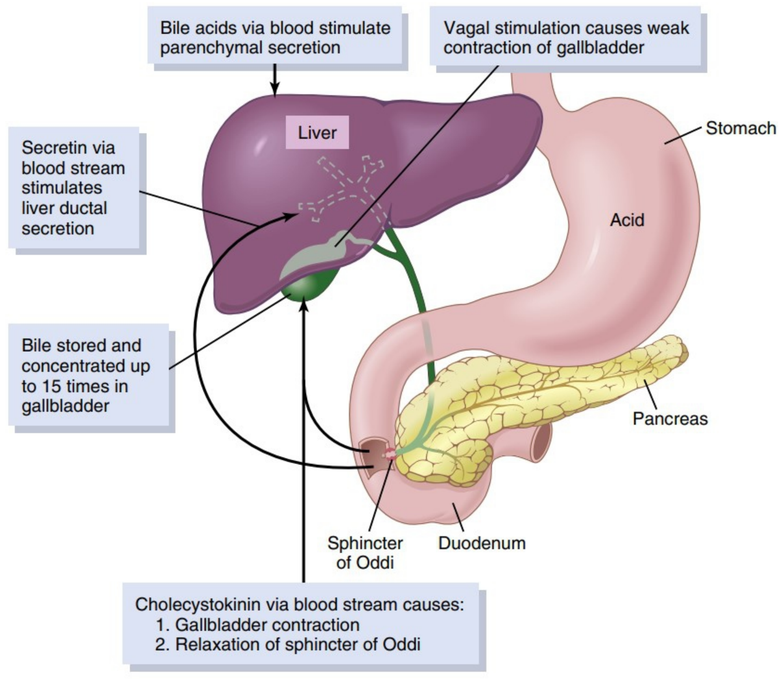
Phases of gastric secretions and their regulation



Regulation of pancreatic secretions



Regulation of hepatic secretions and gall bladder emptying



Digestion and Absorption

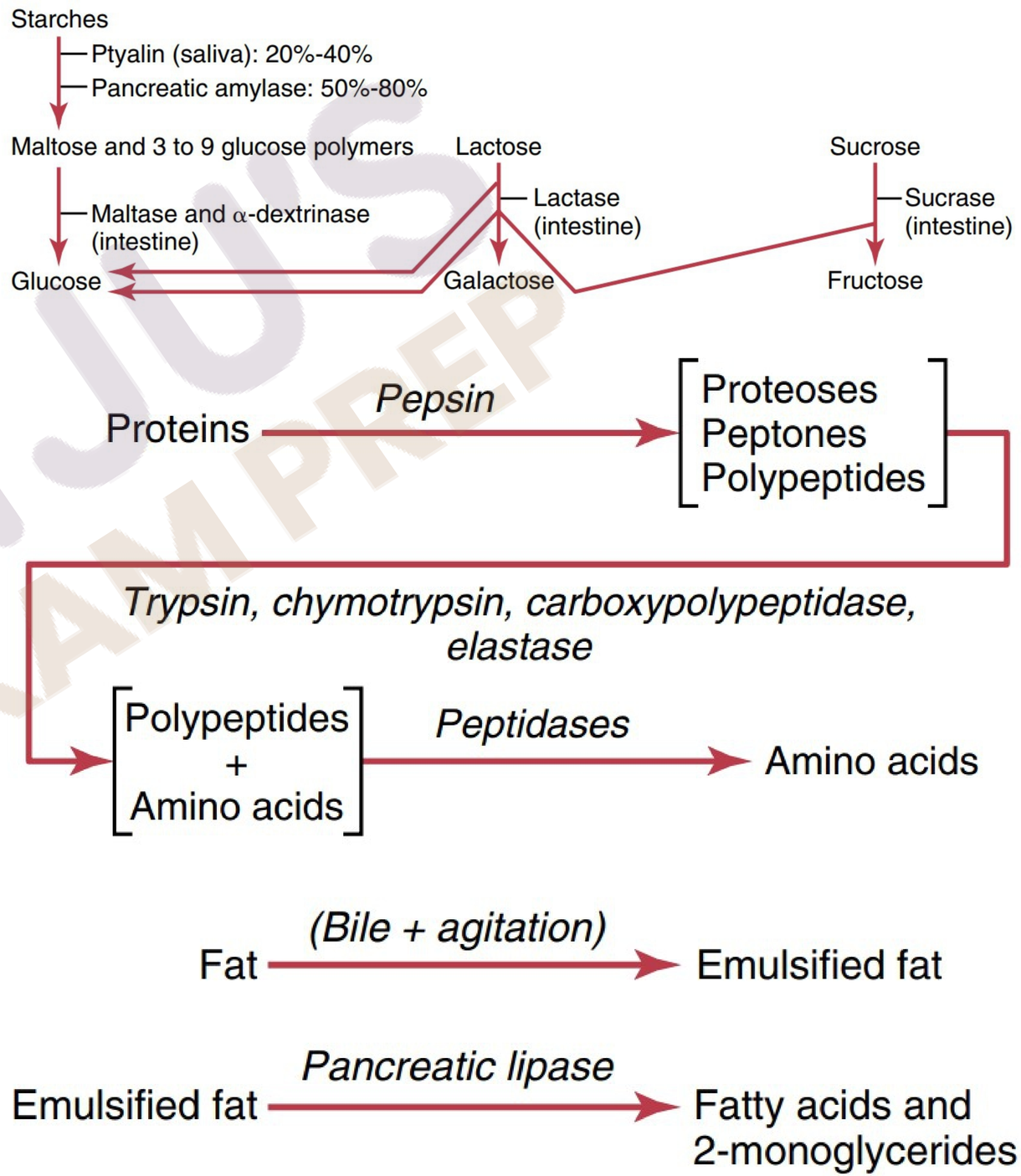
Major enzymes involved in digestion

Source	Enzyme	Activator	Substrate	Catalytic Function or Products
Salivary glands	Salivary α-amylase	Cl^-	Starch	Hydrolyzes 1:4α linkages, producing α-limit dextrins, maltotriose, and maltose
Stomach	Pepsins (pepsinogens)	HCl	Proteins and polypeptides	Cleave peptide bonds adjacent to aromatic amino acids
	Gastric lipase		Triglycerides	Fatty acids and glycerol
Exocrine pancreas	Trypsin (trypsinogen)	Enteropeptidase	Proteins and polypeptides	Cleave peptide bonds on carboxyl side of basic amino acids (arginine or lysine)
	Chymotrypsins (chymotrypsinogens)	Trypsin	Proteins and polypeptides	Cleave peptide bonds on carboxyl side of aromatic amino acids
	Elastase (proelastase)	Trypsin	Elastin, some other proteins	Cleaves bonds on carboxyl side of aliphatic amino acids
	Carboxypeptidase A (procarboxypeptidase A)	Trypsin	Proteins and polypeptides	Cleave carboxyl terminal amino acids that have aromatic or branched aliphatic side chains
	Carboxypeptidase B (procarboxypeptidase B)	Trypsin	Proteins and polypeptides	Cleave carboxyl terminal amino acids that have basic side chains
	Colipase (procolipase)	Trypsin	Fat droplets	Binds pancreatic lipase to oil droplet in the presence of bile acids
	Pancreatic lipase	…	Triglycerides	Monoglycerides and fatty acids
	Cholesteryl ester hydrolase	…	Cholesteryl esters	Cholesterol
	Pancreatic α-amylase	Cl^-	Starch	Same as salivary α-amylase
	Ribonuclease	…	RNA	Nucleotides
	Deoxyribonuclease	…	DNA	Nucleotides
	Phospholipase A_2 (prophospholipase A_2)	Trypsin	Phospholipids	Fatty acids, lysophospholipids
Intestinal mucosa	Enteropeptidase	…	Trypsinogen	Trypsin
	Aminopeptidases	…	Polypeptides	Cleave amino terminal amino acid from peptide
	Carboxypeptidases	…	Polypeptides	Cleave carboxyl terminal amino acid from peptide
	Endopeptidases	…	Polypeptides	Cleave between residues in midportion of peptide
	Dipeptidases	…	Dipeptides	Two amino acids
	Maltase	…	Maltose, maltotriose	Glucose
	Lactase	…	Lactose	Galactose and glucose
	Sucrase[b]	…	Sucrose; also maltotriose and maltose	Fructose and glucose
	Isomaltase[b]	…	α-Limit dextrins, maltose Maltotriose	Glucose
	Nuclease and related enzymes	…	Nucleic acids	Pentoses and purine and pyrimidine bases
Cytoplasm of mucosal cells	Various peptidases	…	Di-, tri-, and tetrapeptides	Amino acids

[a] Corresponding proenzymes, where relevant, are shown in parentheses.

[b] Sucrase and isomaltase are separate subunits of a single protein.

Digestion of carbohydrates, proteins and fats



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