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| --- | --- | --- | --- |
| Biological molecule | Where digested? | Enzymes involved | Process of absorption |
| Carbohydrates | Mouth  Small intestine/ ileum | **Carbohydrases**  Salivary amylase hydrolyses alternate glycosidic  Pancreatic amylase bonds in starch molecules to maltose  Maltase membrane-bound disaccharidase on cell  surface of ileum epithelial cells.  Sucrose hydrolyses single glycosidic bond in  Lactase disaccharide to form monosaccharide | Co-transport of glucose  Diffusion |
| Lipids | Small intestine | Bile salts from Liver (not an enzyme) emulsifies large fat droplets to small droplets called micelles. Increases surface area for lipases to act on  **Lipases**  Produced in pancreas and hydrolyse ester bonds in triglycerides to fatty acids and monoglycerides. | * **diffuse** across the cell-surface membrane into the epithelial cells. * They are then transported to the **endoplasmic reticulum** where they are recombined to form **triglycerides**. In the ER and Golgi apparatus they associate with cholesterol and lipoproteins which become surrounded by a protein coat to form structures called **chylomicrons.** * The chylomicrons are **water soluble** lipoproteins and are too big to pass into blood capillaries but can enter the large pores of the **lacteals**. Thus the chylomicrons move out of epithelial cell by **exocytosis** and enter the lymphatic capillaries called l**acteals.** |
| Proteins | Stomach  Small intestine/ ileum | **Proteases**   * **Endopeptidases**: hydrolyse peptide bonds between specific amino acids in the middle of a polypeptide * **Exopeptidases**: hydrolyse peptide bonds between specific amino acids at the ends of a polypeptide (produced by pancreas) * **Dipeptidases**: hydrolyse the peptide bond in a dipeptide (membrane-bound on cell surface of ileum epithelial cells) | Co-transport of amino acids  Diffusion |

