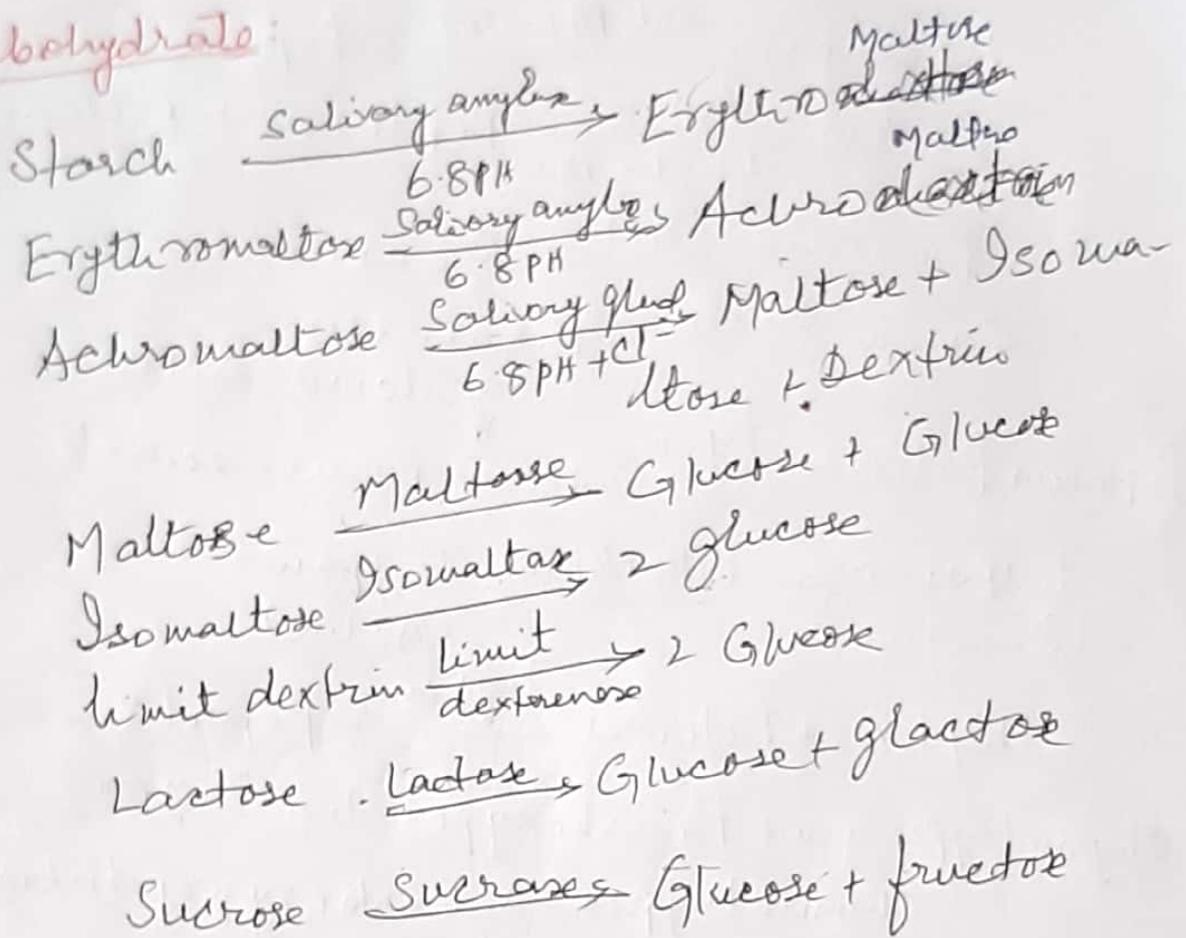


Mechanism of Digestion

Carbohydrate:

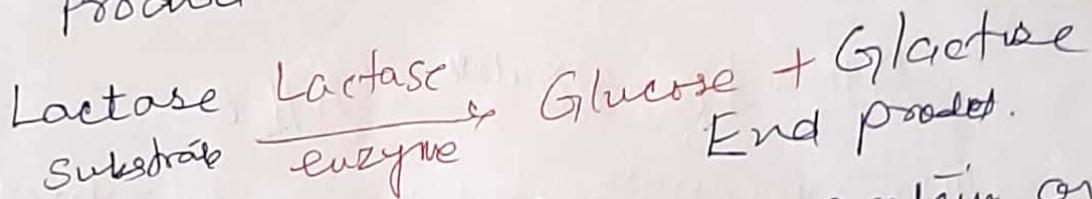


Products of carbohydrate digestion are absorbed ~~by~~ from the small intestine into blood. Monosaccharides like fructose are absorbed by passive diffusion which is slow. Glucose and Galactose are absorbed by active transport.

A mobile carrier molecule in mucosal cell membrane binds both Na^+ and glucose from the lumen. It transport them and release them into cytosol.

ROLE OF ENZYMES IN DIGESTION

- * Biological catalysts produced by living cells.
- * They are soluble and colloidal substances.
- * Kühne 1878 coined the term enzyme.
- * The substance on which enzyme acts is called substrate. Final product is called end product.



- * Some enzymes are formed of protein only.
Ex amylase, urease, etc.
- * But other ~~protein~~ non protein (Prosthetic group)
- * ~~protein~~ Prosthetic group = Apoenzyme
Protein part = Apoenzyme
Apoenzyme + Prosthetic gr = Holoenzyme

Zymase and Zymogen.

Zymase: If an enzyme which is secreted which act upon as such called zymase.
eg. All endoenzyme

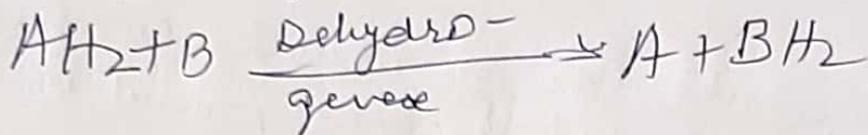
Zymogen: Secreted in inactive form called Zymogen or pro enzyme
E: Trypsinogen \xrightarrow{HCl} Trypsin

(2)

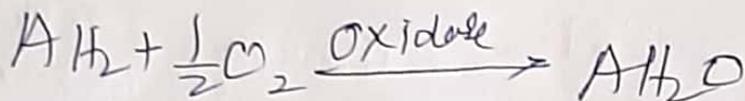
Classification of Enzyme.

① Oxidoreductase - $\text{Oxid}^n + \text{Red}^{\Delta}$

① Dehydrogenase

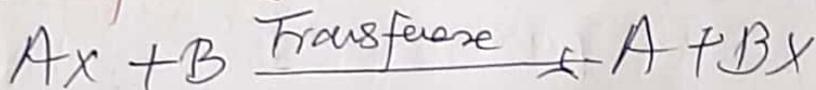


② Oxidase:



(iii) Oxygenase: These are enzymes which catalyze the incorporation of oxygen directly into the substrate.

② Transferase



③ Hydrolase: \rightarrow Hydrolysis

④ Lyase: Removal a group of atom from their substrate leaving double bond or add gr. to double bond.

⑤ Isomerase: Catalyze isomerization.

⑥ Ligase: or Synthetase: Catalyze synthesis reaction by joining two molecules.

Protein: Active in acidic medium

Pepsinogen $\xrightarrow{\text{HCl (PH 1.2-1.8)}}$ Pepsin

Protein $\xrightarrow[\text{(1.2-1.8 PH)}]{\text{Pepsin}}$ Peptones + Proteoses

Prothrombin $\xrightarrow{\text{HCl}}$ Renin

Casein $\xrightarrow{\text{Renin}}$ Paracasein

Peptones + Proteoses $\xrightarrow{\text{Pepsin}}$ Calcium, Paracaseinate
↓ calcium salt

Trypsinogen (Inactive) $\xrightarrow{\text{Enterokinase}}$ Trypsin (Active)

Peptones + Proteoses $\xrightarrow{\text{Trypsin}}$ Peptides

Chymotrypsinogen + Procarboxypeptidase $\xrightarrow{\text{Trypsin}}$
Chymotrypsin & Carboxypeptidase

Peptones + Proteoses $\xrightarrow[\text{carboxypeptidase}]{\text{chymotrypsin}}$ Peptides

Amino peptidase (Erepsin) + Dipeptidase

Peptides $\xrightarrow{\quad}$ Amino acid

→ Carboxypeptidase separate individual amino acid from carboxyl C-terminal

→ Aminopeptidase hydrolysed the terminal peptide bond at amino or N-terminal.

→ New amino acids are absorbed actively.

→ Amino acid $\xrightarrow{\text{deamination}}$ α -Ketoglutaric acid.

once the mobile carrier molecule ⁴ releases Na^+ glucose into the cytosol it return back to pick up to new glucose molecule. This need energy ATP which obtained by Na^+ pump.

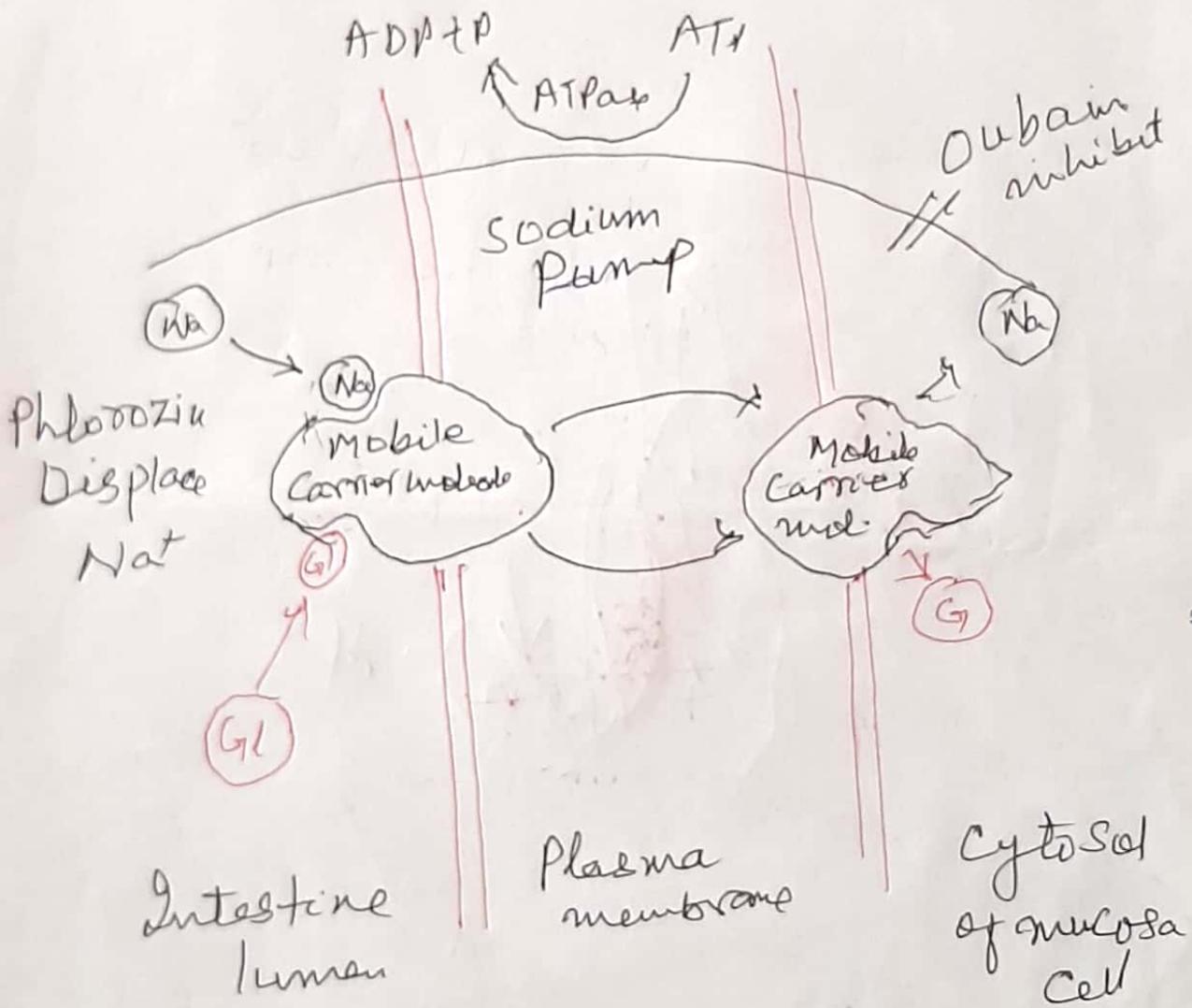
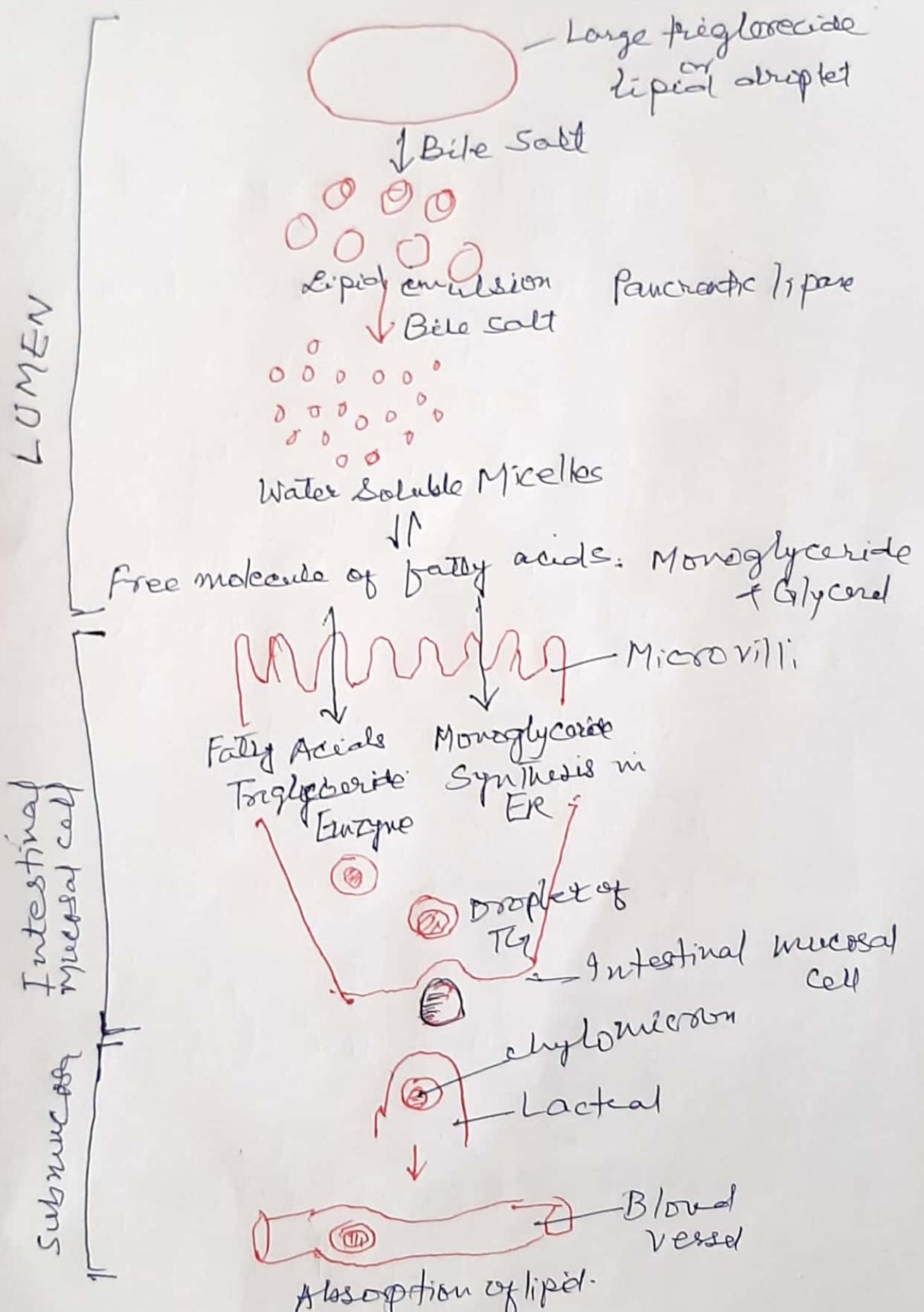


Fig. Model explain absorption of glucose by intestinal mucosal cell.

ABSORPTION OF LIPID



Absorption of lipid.
Fig. Lipid digestion