

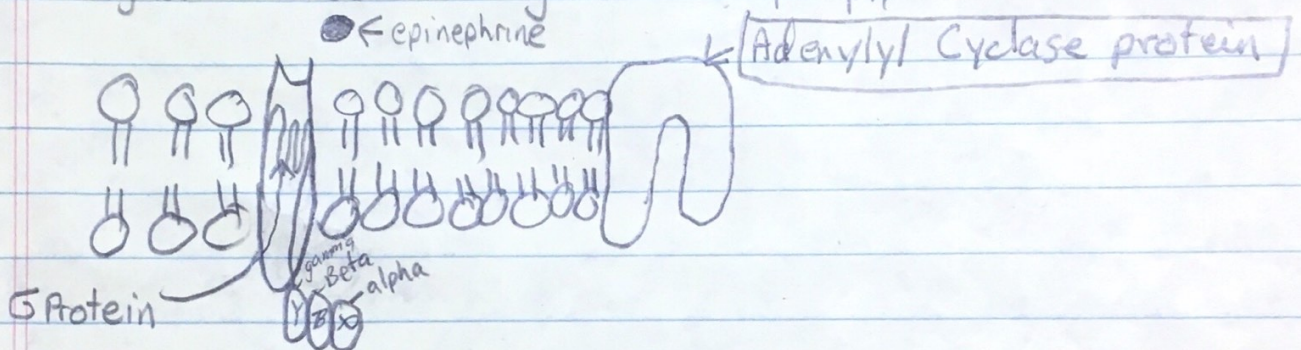
(1)

Signal Transduction Pathways

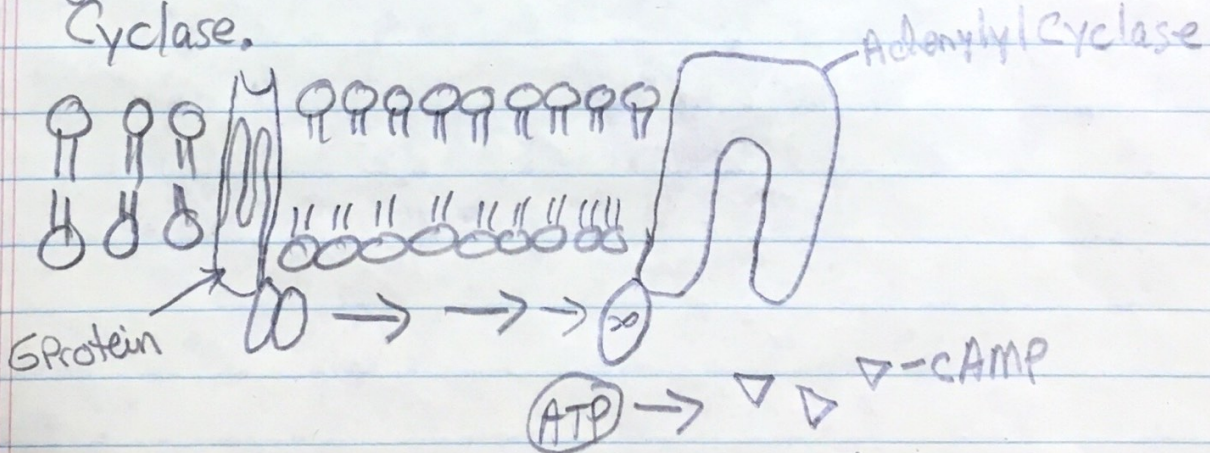
2 Types: Protein modification
Phosphorylation Cascade

G Protein Liver Cell example

Signal molecule = Ligand = epinephrine



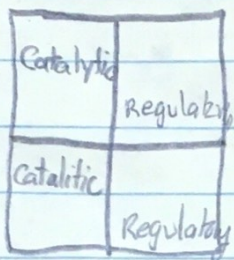
When Ligand binds to G Protein, it changes the shape of the G Protein. The alpha subunit is released and goes to another membrane protein called Adenylyl Cyclase.



The alpha subunit activates the Adenylyl Cyclase protein. The enzyme protein converts ATP to cAMP. cAMP is cyclic Adenosine Mono phosphate which acts as a 2nd messenger. cAMP target a Protein Kinase.

(2)

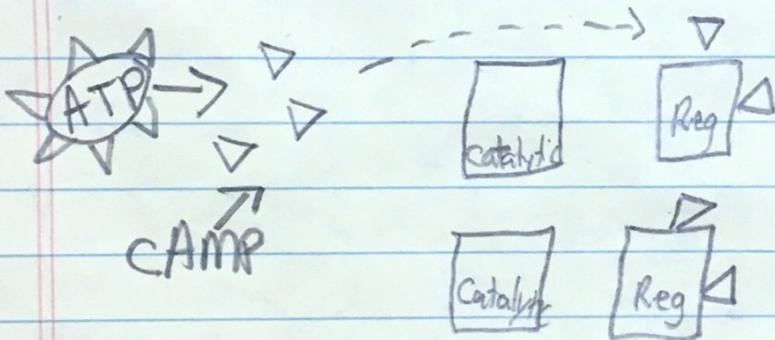
Protein Kinase is made of several protein subunits



Catalytic means things to speed up a reaction

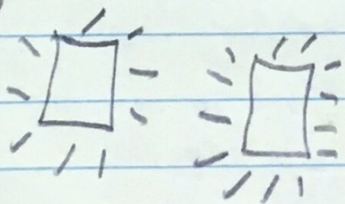
Regulatory parts inhibit or stop the catalytic parts from working while attached.

cAMP binds to the regulatory parts and allow the release and activation of the catalytic parts



The catalytic portions are phosphorylated by ATP.

+ 2 ATP



and now can be used to activate enzymes in the cell. Ex. Glycogen is broken down into glucose by phosphorylase

Glycogen

glucose - glucose - glucose - glucose - glucose

