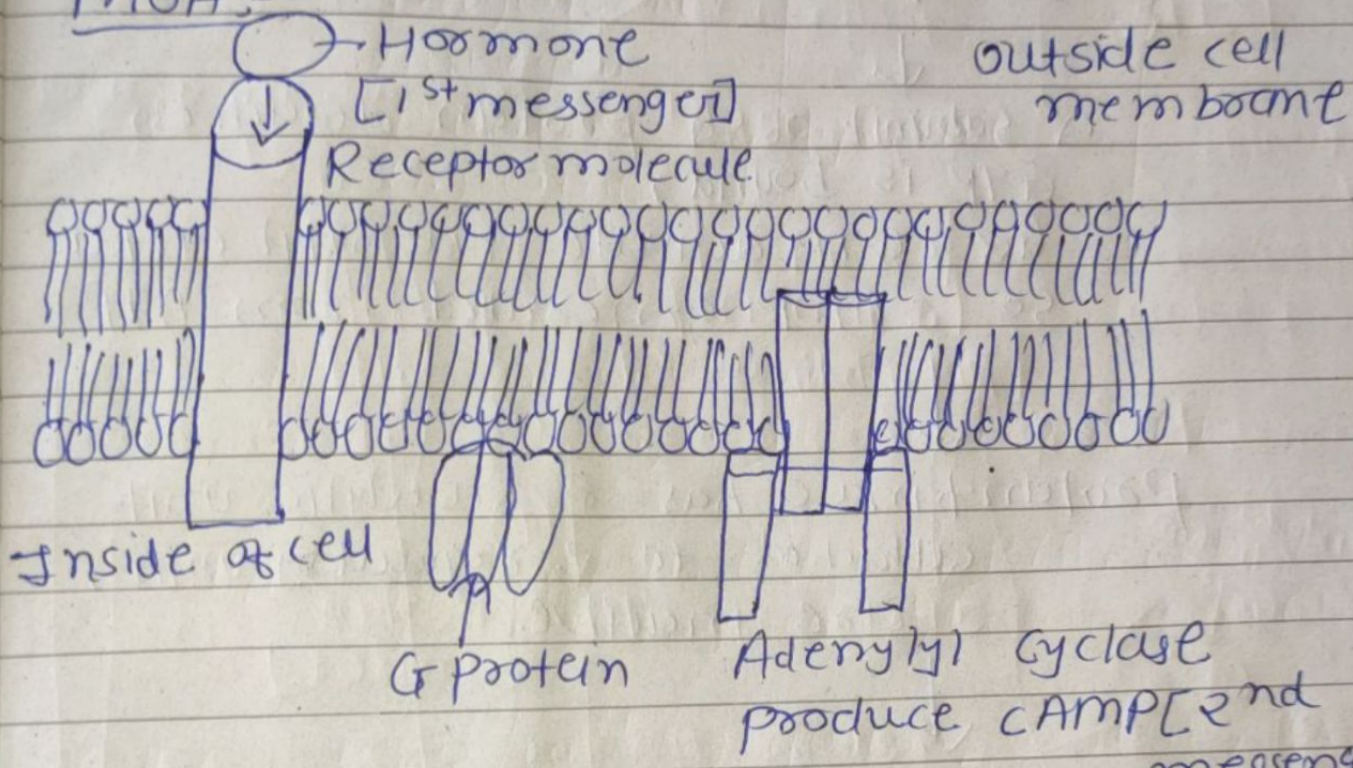
* G protein coupled receptor :-

→ GPCR - Transmembrane protein
→ G-protein - Heterotrimeric GTP/GDP binding regulatory protein
- Has 3 Subunit - α, β, γ

MOA :-



→ Hormone bind to GPCR
↓
α Subunit detach

→ GPCR is baund with G protein - α, β & γ subunit & is baund with GDP & is inactive.
GPCR are membrane baund

↓

When hormone attaches to GPCR

↓

α subunit of G protein detaches, GTP is baund,
Gα - GTP activate adenylyl cyclase
So cAMP generated from ATP

↓

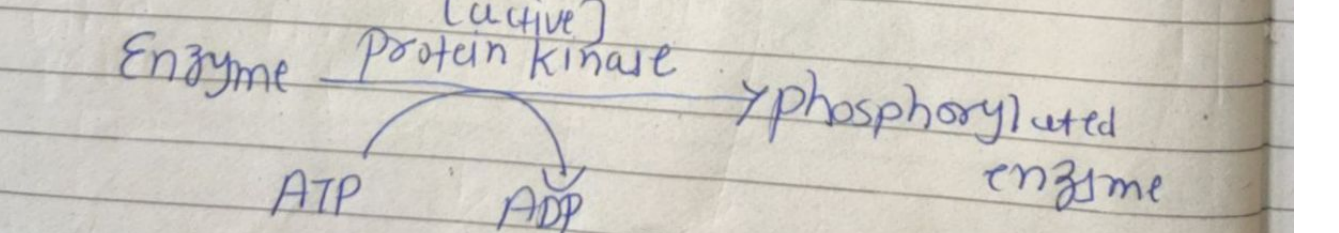
Protein kinase has 2 catalytic unit attached to 2 regulatory units, are inactive.

↓

cAMP bind regulatory units,
So catalytic unit free & kinase is active

↓

Active protein kinase phosphorylate enzyme protein.



e.g. glycogen phosphorylase
Hormone Sensitive lipase

→ Inactive G protein ← GTPase — Active G protein

GDP-α-βγ — (+) GTP → α-GTP + βγ

→ G protein → which stimulate adenylyl cyclase called G stimulatory

→ G protein → (−) adenylyl cyclase called G inhibitory.

e.g. ⊕ Stimulate Adenylyl cyclase
- ACTH, ADH, calcitonin, glucagon, epinephrine

e.g. ⊖ ; Adenylyl cyclase
- Acetylcholine
Angiotensin II
Somatostatin.

e.g. of toxin acting through cAMP :-

1. Vibrio cholera - ↑ cAMP
2. Pertussis - ↓ cAMP