Quiz 1 Material

Lipids & Membranes; Permeability & Transport; Channels / Membrane Potential; Receptors as Channels; GPCRs; RTKs; Phosphoinositides (PIPs)

Generic G-Protein Signaling: Activation & Inactivation

1. G-protein w/ GTP-α separates from βγ.
2. Targets activated.
3. Gα-GTP hydrolyzes its own GTP to GDP.
4. Gα re-binds βγ, & G-protein returns to resting state.

G-Protein Signaling: Adrenalin Pathway

- signal/stimulus = adrenalin
- receptor = β-adrenergic receptor
- transducer = Gs (α_2, β, γ) protein
- target = adenylyl cyclase
- 2^{nd} messenger = increase in cAMP
- result = active Protein Kinase A (PKA)

Turning Off β-Adrenergic Signaling

1. Adrenalin released from receptor.
2. GAP stimulates GTPase by Gs.
3. Gs-α hydrolyzes GTP.
4. Phosphodiesterase cleaves cAMP.
5. PKA turns off as regulatory & catalytic subunits assemble.
6. Phosphoprotein phosphatase turns off PKA targets.
7. BARK phosphorylates receptor in active state.
8. β-arrestin binds phosphorylated receptor to STOP SIGNAL.