Study guide 7

Lecture 11:

1. How is G-protein coupled receptor signaling activated? (from ligand binding to the activation of α-subunit and β-γ complex)
2. What intracellular signaling can be triggered by GPCR signal? (those mediated by cAMP, cGMP, DAG, IP3, or direct activation of ion channels)
3. How could GPCR trigger Ca2+ release, and how the Ca2+ concentration can be reduced instantly soon after release (we have talked about 5 different routes)?
4. Be able to tell the signaling mediated by GPCR in controlling vision and smell.
5. How could GPCR be desensitized?
6. What is typical RTK signaling? How do the dominant negative mutants work?
7. RTK phosphorylation has dual roles (protein recruitment and kinase activation)
8. What are the three major signaling pathways downstream of RTK?
9. What is Ras pathway? How is MAP kinase pathway activated?
10. How is PI3K activated and how could PI3K signaling can be reversed? By whom?
11. Understand that Rho GTPase control cell movement / cytoskeleton rearrangement.
12. Briefly illustrate the JAK/STAT pathway in cytokine signaling/prolactin, etc.
13. Briefly illustrate how Histidine kinase controls chemotaxis of bacteria.

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