Quiz 3 Key
BI-102-2, Fall '08, Dr. C. S. Tritt

Please keep your answers concise (more words will not necessarily lead to more points). Use the amount of space provided as a guide as to how detailed to make your answers. **Answer any 6 of the following 7 questions on this 2-sided test.**

1. Name and describe in reasonable detail a particular type of enzyme inhibition.

Competitive – Inhibitor blocks enzyme's active site.

Non-competitive or allosteric – Inhibitor binds enzyme at other than active site.

2. Briefly explain the difference between catabolism and anabolism.

Catabolism involves the breaking down of complex molecules and/or breaking chemical bonds.

Anabolism involves the building up of complex molecules and/or formation of chemical bonds.

3. Briefly describe the general role of NAD^+/NADH in cellular respiration.

The coenzyme NAD^+/NADH acts as an electron carrier in cellular respiration.

4. Under what particular circumstances do cells use fermentation and why is this necessary?

Cells resort to fermentation when there is no oxygen available to act as the terminal electron acceptor. Fermentation is necessary because the regeneration of electron carriers, generally NAD^+/NADH, is necessary for metabolism, generally glycolysis, to continue.

5. Name an environmental factor to which cells typically react.

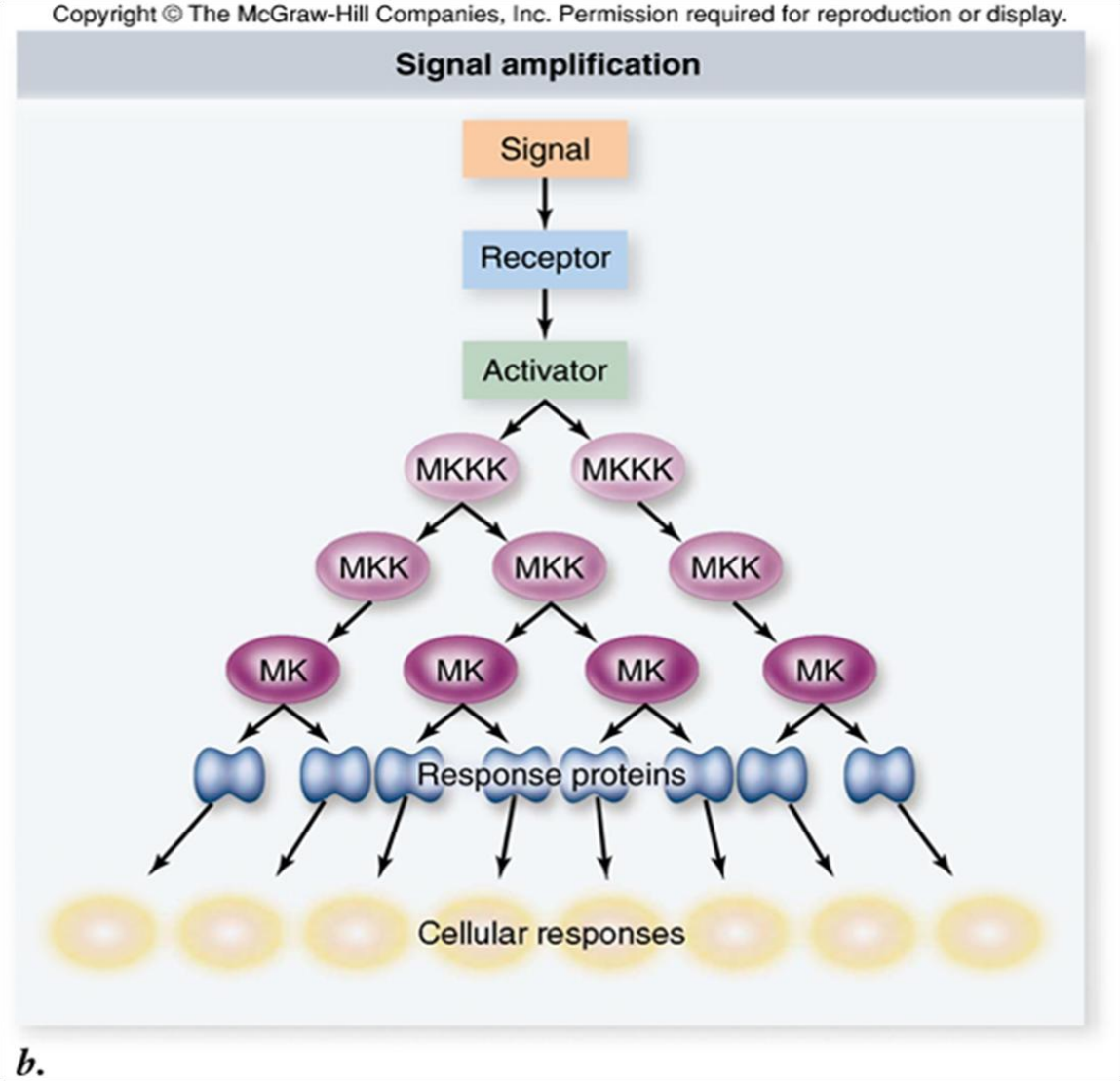
Cells typically react to chemical concentrations, pH, mechanical forces (pressure), direct contact, electric fields, light, etc.

6. Would you expect a signal molecule that reacts with a surface receptor to be hydrophilic or hydrophobic?

Hydrophilic.

7. With respect to cell signaling, explain the purpose and mechanism of enzyme cascades (including kinase cascades).

Enzyme cascade amplify signals in cells. The mechanism of cascades involve one enzyme activating another. Since an active enzyme can catalyze thousands of reactions, this results in amplification. This is diagramed schematically below:



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