Multiple Choice Practice Tutorial 5

1. The one gene - one enzyme hypothesis of Beadle and Tatum stated
a. all genes encode enzymes
b**. enzymes are encoded by genes**
c. enzymes and genes function together
d. genes need enzymes to function

2. A set of *Neurospora* mutants were identified that required supplementation by compound X. Precursors of compound X were compound Y, which could give rise to compound X, and compounds A and B that each could give rise to compound Y. You would expect A or B→y→X
a. some mutants would be rescued by supplementation by Y, some by supplementation by A, and some by supplementation by B
b. no mutants would be rescued by supplementation by Y
c. supplementation by A and B would rescue all the mutants
d. supplementation by A or B would rescue all the mutants

3. The ABO blood groups are important in choosing the proper blood donor. An AB father and an O mother have a child who requires a blood transfusion. Both parents offer to be donors
a. only the father is accepted as a donor, because the child has to have received either the A or B allele from him
b. both the mother and father are accepted as donors because you can't have too much blood in this situation
c. only the mother can be a donor because the child would react against the father's blood
d. neither parent can be a donor because the child has to have a blood type different from both parents

4. A complementation test is useful
a. to identify mutations in the same gene
b. to insure that traits are monoallelic
c. to identify linked genes
d. to provide a fine structure mapping of mutations

5. The Ras gene can mutate to trigger uncontrolled cell proliferation and thus cause cancer. Researchers hope to be able to block the proliferation signal with a drug, but no drug has been found to turn off the activated Ras protein. The researchers want to try another strategy.
a. they should find a drug that blocks the pathway that leads to the normal activation of Ras (don't want to disactivate this gene because it's a very important g-protein, so it's better to go further downstream and affected that one)
b. they should find a drug that blocks the function of the protein that is acted on by the active Ras
c. they should find a drug that would activate another proliferation signal
d. they should find a drug that blocks all cell division