

1. Individuals with a thiopurine methyltransferase deficiency
 - a. Are more easily able to metabolize chemo drugs used to treat leukemia, making the drugs a more effective treatment
 - i. Incorrect-these patients are incapable of metabolizing the chemo drugs into their inactive form
 - b. Require a lower dosage of chemo than normally prescribed
 - i. Correct-patients with this disorder cannot metabolize the chemo drugs into their inactive form → therefore, they can be treated with a lower dosage of the drug
 - c. Are considered “ultrarapid metabolizers”
 - i. Incorrect-these patients would be considered poor metabolizers
 - d. Are unable to metabolize chemo drugs used to treat leukemia, rendering the drug useless for treatment
 - i. Incorrect-while they are unable to metabolize the chemo drugs, this results in a longer duration of action of the active form of the drug.
 - e. Require a high dosage of chemo than normally prescribed
 - i. Incorrect-treating these patients with a high dosage (or even a normal dosage) would cause toxicity
2. Two genes are considered “linked” if:
 - a. They are found at the same location on homologous chromosomes
 - i. Incorrect-this describes two alleles of the same gene
 - b. They are found to assort independently of one another
 - i. Incorrect-genes that are linked will tend to be transmitted together
 - c. Have their loci physically very close together on the same chromosome
 - i. Correct-this is the definition of linked genes
 - d. They are both found to be mutated in patients with a common disease, but not more often than would be expected by chance
 - i. Incorrect- For these two genes to be considered linked, the association would have to occur more often than would be expected by chance
 - e. They both effect the same phenotype
 - i. Incorrect-this is simply a distractor
3. Epigenesis:
 - a. Refers to modification to genes through changes in DNA sequence
 - i. Incorrect-epigenesis does not effect DNA sequence
 - b. Refers to modification to genes, usually due to methylation at a CpG site
 - i. Correct-this is the definition of epigenesis
 - c. Refers to modifications to genes that are not preserved and passed down during cell division to daughter cells
 - i. Incorrect-these modifications CAN be passed preserved and passed down

- d. Refers to modification to genes, usually due to methylation at a CpG site
 - i. Incorrect-epigenesis most often occurs by methylation at a CpG site
 - e. Occurs uniformly in all cells of the body
 - i. Incorrect- epigenesis is extremely tissue/cell-type specific
4. Heritable Retinoblastoma:
- a. Is the only type of Retinoblastoma
 - i. Incorrect-it can also be sporadic
 - b. Is the most common eye tumor in children
 - i. Correct- this is a fact
 - c. Does not require an alteration in a second gene
 - i. Incorrect- heritable retinoblastoma predisposes an individual to retinoblastoma through the inheritance of one mutated allele, but requires a "second hit" to produce the disease
 - d. Usually presents in only one eye
 - i. Incorrect- it usually presents in both eyes and at an earlier age than the sporadic form
 - e. Is a dominant disease
 - i. Incorrect- it is recessive