Name:_____KEY_____ Dr. Reichler's Bio 325 TTh 7:30-9pm Fall 2007 Quiz 11/15

1) How could PCR be used to differentiate between a haploid or diploid cell? Would a single PCR reaction be sufficient?
If PCR primers can be designed for different alleles, then the presence of different products would indicate homologous chromosomes. Multiple genes would have to be checked because homozygous alleles would give the same results as haploid.

2) Which occurs first during meiosis, crossing-over or random assortment?
Crossing-over occurs as the DNA is packaging, and independent assortment occurs later as the DNA is lining up.

3) Would having fewer chromosomes lead to more or less genetic diversity in offspring?
Less diversity due to fewer combinations by independent assortment.

4) Are the sister chromatids that line up in the second cell division of meiosis identical?
If crossing over has occurred then they are not identical.

5) What can explain the disappearance in one generation and later reappearance in a subsequent generation of a trait?
Recessive alleles.

6) Can one parent with A blood type and another parent with B blood type have an offspring with O blood type?
Yes. If one is AO and the other BO.

7) If liking chocolate is coded for by a gene on the X chromosome with not liking chocolate as the recessive allele, and a woman who dislikes chocolate mates with a man who likes chocolate, and they are having fraternal male/female twins, what is the probability for each of their offspring to like chocolate?
100% of males will dislike chocolate and none of the females.

8) What do the changes in male:female demographics at different ages since 1950 say about the likely cause of the change in male:female ratio as people get older?
The difference is likely behavioral generated by the environment because the demographic change has occurred over a short time. A genetic change would not be expected to occur so rapidly.

9) Why is tracing ancestry via mitochondrial DNA easier than using nuclear DNA?
There is no recombination of mtDNA.

10) What are two reasons that females provide more than 50% of their DNA to their offspring?
They provide 100% of the mtDNA and for males the X chromosome is much larger than the Y chromosome.