Name:_____ Dr. Reichler's Bio 325-uex Fall 2008 Quiz 11/13

1) How could PCR be used to differentiate between a haploid or diploid cell? Would a single PCR reaction be sufficient?

2) Which occurs first during meiosis, crossing-over or random assortment?

3) Would having fewer chromosomes lead to more or less genetic diversity in offspring?

4) Are the sister chromatids that line up in the second cell division of meiosis identical?

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

6) Can one parent with A blood type and another parent with B blood type have an offspring with O blood type?

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?

8) When would a female provide more than 50% of her DNA to her offspring?

9) Why would some areas of the X chromosome in females not need to be inactivated?

Answers:

1) 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) Crossing-over occurs as the DNA is packaging, and independent assortment occurs later as the DNA is lining up.

3) Less diversity due to fewer combinations by independent assortment.

4) If crossing over has occurred then they are not identical.

5) Recessive alleles or imprinting/epigenetics.

6) Yes. If one is AO and the other BO.

7) 100% of males will dislike chocolate and none of the females.

8) For her male offspring the X chromosome from mom is much larger than the Y chromosome from dad.

9) The pseudoautosomal regions are present on the X and Y chromsome. So males have 2 copies and females do not need to compensate for having 2 X chromosomes.