Bio 97: Genetics
Epistasis and Complementation, Exceptions to Mendel, Chi Square, and the Chromosomal Basis of Human Disease

1.) What is epistasis?

2.) In epistasis, the gene whose phenotype is expressed is said to be __________, while the phenotype that gets suppressed or altered is said to be __________.

3.) For epistatic genes, a dihybrid cross produces a modified __________ ratio of phenotypes. What happens to the genotypic ratio?

4.) What is complementation? What happens when there is a failure to complement?

5.) When are mutations allelic? When are they not?

6.) When the phenotype of a heterozygous genotype is intermediate between the homozygous phenotypes, one explanation is ________________. Give an example.

7.) ________________ is when both alleles contribute to the phenotype. Give an example.

8.) What is variable expressivity? Give an example.

9.) When the phenotype does not always match the genotype, you get an example of ________________. Give an example.

<table>
<thead>
<tr>
<th>Color</th>
<th>Observed</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>87</td>
<td>90</td>
</tr>
<tr>
<td>Yellow</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Red</td>
<td>41</td>
<td>40</td>
</tr>
</tbody>
</table>

10.) Calculate the Chi Squared for the above chart.

11.) What is a karyotype?

12.) What do the terms metacentric, submetacentric, and acrocentric describe?

13.) What is euploid?
14.) What is aneuploid? What are some causes?

15.) ___________ is the exchange of genetic material between non-homologous chromosomes.

16.) What is the result of a balanced translocation? What is the result of an unbalanced translocation?

17.) A ________________ is a fusion between two non-homologous acrocentric chromosomes.

18.) ___________ allows the evolution of gene families.