Population Genetics
Problem Set 8

1. For zoo animals, a minimum captive population size of 50 individuals is sometimes recommended. For a population of this size, how much of the current generation's heterozygosity will be lost in the next generation due to drift?

2. What is the expected number of effective alleles under neutrality?

3. How would inbreeding or dominance affect the mutation-selection balance for a deleterious allele?

4. What is the difference between orthologous and paralogous genes?

5. Give the best definition for the following terms:

a. Monoecious:

b. Infinite allele model:

c. Relative rate test:

d. Molecular clock:

e. Gene flow:

f. Continent-island model of migration:

g. General model of migration:

h. Wahlund effect:

i. Admixture:

j. Metapopulation:

k. Cline:

l. Coalescence:

6. What are the similarities and differences between Kimura's Neutral Theory and Ohta's Nearly Neutral Model?

7. What are the three F coefficients of Wright?

8. What are the similarities and differences between the stepping-stone model of gene flow, and isolation by distance?

9. Describe 5 tests of selection (or neutrality)