AP Biology Evolution Recovery Test



A large population of laboratory animals has been allowed to breed randomly for a number of generations. After several generations, 30% of the animals display a recessive trait (*aa genotype*), the same percentage as at the beginning of the breeding program. The rest of the animals show the dominant phenotype, with heterozygotes indistinguishable from the homozygous dominants. **Show all your work.**

a. What is the frequency of the A allele in this population?

b. What is the frequency of the Aa genotype in this population?

c. What is the frequency of the AA genotype in this population?

d. If the percentages are the same in the population as they were at the beginning of the breeding program, this population is at equilibrium. Name two of the population conditions for Hardy-Weinberg Equilibrium to be met.

1. **Differences in the protein Hemoglobin.**



1. Use this data to create a cladogram showing the relationships between these organisms.
2. According to this data and your cladogram, which two organisms are the most closely related?
3. This data shows molecular evidence for evolution. Name and describe two other types of evidence used to determine if organisms share a common ancestor.



1. Explain what is happening to this population? Relate this to the idea of “survival of the fittest”.
2. What type of natural selection is occurring in this population?
3. Draw a graph to demonstrate this type of selection. Make sure your x and y axis are labeled appropriately for this example.