

CHAPTER 19**HANDOUT****Populations in Hardy-Weinberg Equilibrium****BLM 19.1.9**

Answer the questions below in the spaces provided.

1. A population of birds is in Hardy-Weinberg (genetic) equilibrium. 20 percent of the birds have short tail feathers, which is a recessive trait. Determine the genotype and allele frequencies of the population.

2. In a population of ferns, a biologist has determined that 60 percent of leaf-shape genes in the population carry the dominant allele for curly leaves (C). The remaining 40 percent of the genes carry the recessive allele for straight leaves (c). Determine the genotype and allele frequencies of the next generation of ferns. Use a Punnett square to show your work.

3. Allele Z is dominant, and is present in a population at a frequency of 37 per 100 individuals. Assuming the population is in Hardy-Weinberg equilibrium, what proportion of individuals in the population would be expected to be (a) homozygous dominant, (b) heterozygous, and (c) homozygous recessive? Show your work.

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4. In a large, random-mating population, 85 in every 1000 humans carry the recessive allele for red hair.

a) What percentage of the population carries this allele but does not exhibit red hair?

b) Would you expect to see a change in allele frequencies if members of this population preferentially mated with individuals with red hair? Explain your answer.

5. If a small, random-mating population has 18 percent of individuals exhibiting a recessive trait, could you calculate the genotype and allele frequencies of the next generation? Explain your answer.

6. 45 percent of individuals in a population of raccoons have a recessive trait. If the population is in Hardy-Weinberg equilibrium, calculate the frequency of the dominant allele in the population.
