

Guided Notes: Evolution of Populations

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Guiding Question: How can evolution be measured?



1. Quick review of Mendelian genetics

BB x bb

Bb x bb

Bb x Bb

2. Gene pool

3. Allele frequency

4. Hardy Weinberg Equilibrium

Steps

- 1) Determine the number of homozygous recessives (q^2)
- 2) Take the square root to determine q
- 3) Calculate p ($p + q = 1$)
- 4) Determine homozygous dominant (p^2)
- 5) Find the number of heterozygotes ($2pq$)

$$p + q = 1$$

$$p^2 + 2pq + q^2 = 1$$

5. Practice: If 40 out of 250 cats are white (recessive), what percentage of the population is heterozygous?

6. How does HW equilibrium quantify evolution?

Tibetan Population Example

7. Assumptions of Hardy Weinberg Equilibrium

Why?

1	No selection	
2	No mutation	
3	No migration	
4	Large population	
5	Random mating	

8. Population variation - Factors that can affect variation

- Genetic Drift
- Bottleneck Effect
- Gene Flow
- Founder effect
- Nonrandom / Assortative Mating (Sexual Selection)
- Mutations

9. Types of Selection

- Directional
- Stabilizing
- Disruptive
- Sexual selection

10. Mate choice in spiders ([handout](#))

