

Zoology Lab Midterm Study Guide

In this study guide, I have some hyperlinks to tutorials. You can click the link, or type it into your web browser. However, you'll notice that I also included QR codes. If you have a Smartphone, download a free QR reader app and then scan the code. It will take you right to the webpage I want you to visit.

Human Heredity of Single Gene Traits:

1. Know the following terms:
 - a. P Generation
 - b. F₁ Generation
 - c. F₂ Generation
 - d. Alleles
 - e. Homozygous
 - f. Heterozygous
 - g. Genotype
 - h. Phenotype
2. Know the Mendelian Genetics Laws
 - a. Law of Dominance
 - b. Law of Segregation of Alleles
 - c. Law of Independent Assortment
3. What is a test cross?
4. Know about Hardy Weinberg.
 - a. What does every part of the following formula stand for:
 - i. $P^2 + 2pq + q^2 = 1.0$
 - b. Be able to calculate the frequency of the dominant and recessive allele in a gene pool.
 - c. Be able to calculate the frequency of the homozygous dominant, heterozygous, and recessive individuals in a population.
5. Having trouble with this? Watch some **tutorial videos over Hardy Weinberg** at Khan Academy:
https://www.khanacademy.org/search?page_search_query=hardy%20weinberg%20equation%20practice



6. This video shows how to apply the Hardy Weinberg formula.

<https://www.khanacademy.org/science/biology/her/heredity-and-genetics/v/applying-hardy-weinberg>



7. Practice problems using Hardy Weinberg:

<https://www.khanacademy.org/science/biology/her/heredity-and-genetics/e/hardy-weinberg>



Mendelian Genetics: Their Application to Solving Genetics Problems

1. Be able to solve the following types of genetics problems:
 - a. Monohybrid
 - b. Dihybrid
 - c. Incomplete Dominance
 - d. Sex-linked Traits
2. Having trouble with this? Watch this **tutorial video over how to use a Punnett square** at Khan Academy:

<https://www.khanacademy.org/science/biology/classical-genetics/mendelian--genetics/v/punnett-square-fun>



3. Having trouble with **Solving Monohybrid Problems?** Try these problems:

<https://www.khanacademy.org/science/biology/classical-genetics/mendelian--genetics/e/punnett-squares>



4. Having trouble with **Solving Dihybrid Problems?** Watch this video:

<https://www.khanacademy.org/science/biology/classical-genetics/mendelian--genetics/e/dihybrid-punnett-squares>



Population Genetics: Natural Selection AND the Bottleneck Effect

1. Know the following terms:
 - a. Natural Selection
 - b. Evolution
 - c. Population
 - d. Gene Pool
 - e. Bottleneck Effect
 - f. Founder Effect
 - g. Genetic Fixation
 - h. Genetic Drift
2. 5 Hardy Weinberg criteria that must be met for a population to never evolve:
 - a.
 - b.
 - c.
 - d.
 - e.
3. Why are the Amish suffering from genetic disorders?
4. Know how to calculate allele frequencies.

5. Need help with this? This article explains how to calculate allele frequencies:

<https://www.khanacademy.org/science/biology/her/heredity-and-genetics/a/allele-frequency-the-gene-pool>



6. Here is a video covering how to calculate allele frequencies:

<https://www.khanacademy.org/science/biology/her/heredity-and-genetics/v/allele-frequency>



Animal Classification

1. Who was Carolus Linneaus?
2. Know the following terms:
 - a. Taxonomy
 - b. Binomial nomenclature
 - c. Genus name
 - d. Species name
 - e. Taxa
 - f. Phylogeny
 - g. Dichotomous Key
3. What is correct way to write a scientific name?
4. What is the correct way to type a scientific name?
5. Know the taxonomic rankings in their correct order.
 - a. Which rank is the most inclusive?
 - b. Which rank is the most exclusive?

6. Need some help with using a dichotomous key? This video explains how to do that:

<https://youtu.be/EjvpVNNhj5A>

