

CHAPTER 9 – Patterns of Inheritance

Chapter Reading Guide

I. WORD STUDY

Please complete the following cloze passage section by determining the meaning of each root and then fill in the missing definition of the term which contains the root.

a. **-centesis** = _____ (*amniocentesis*: a technique _____
_____ or
defective fetal cells in the amniotic fluid, obtained by aspiration from a needle inserted into the
uterus)

b. **co-** = _____ (*codominance*: phenotype _____
_____)

c. **di-** = _____ (*dihybrid cross*: a breeding experiment in which _____
_____)

d. **pleio-** = _____ (*pleiotropy*: when a _____
characteristic)

e. **poly-** = _____; **gen-** = _____ (*polygenic*: an additive effect
of _____ a single phenotypic character)

II. READING GUIDE

1. Explain why Mendel's decision to work with peas was a good decision. Define and distinguish between true-breeding organisms, hybrids, the P generation, the F₁ generation, and the F₂ generation.

2. Define and distinguish between the following pairs of terms:

a. **genotype vs. phenotype**

b. **dominant allele vs. recessive allele**

c. **heterozygous vs. homozygous.**

3. Explain how Mendel's principle of segregation describes the inheritance of a single characteristic.

4. Explain how Mendel's principle of independent assortment applies to a dihybrid cross. Illustrate this principle with examples of Mendel's work with peas and recent research on Labrador retrievers.

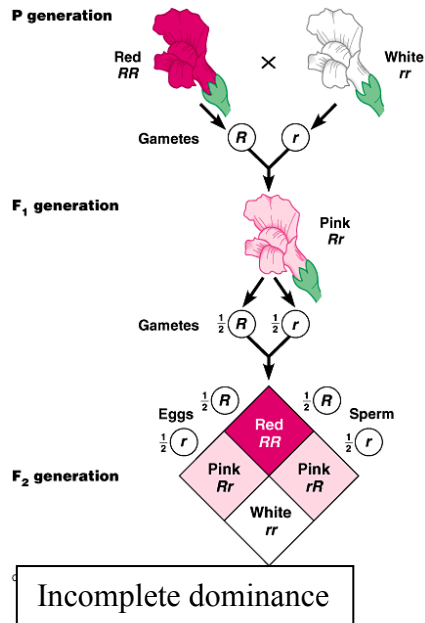
5. Compare the *health risks, advantages, and disadvantages* of the following forms of fetal testing:

a. **amniocentesis**

b. **chorionic villus sampling**

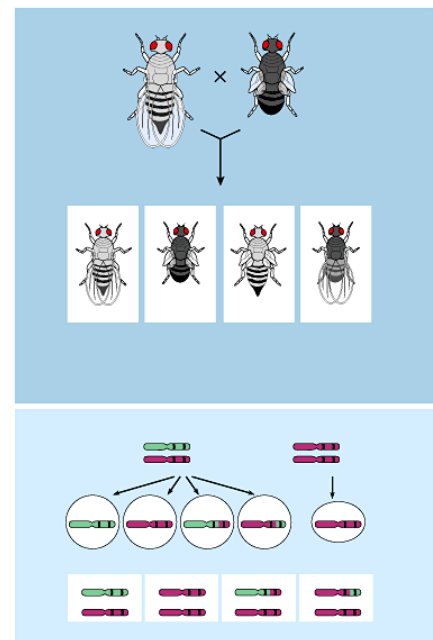
c. **ultrasound imaging**

6. Describe the inheritance patterns of incomplete dominance, multiple alleles, and pleiotropy.



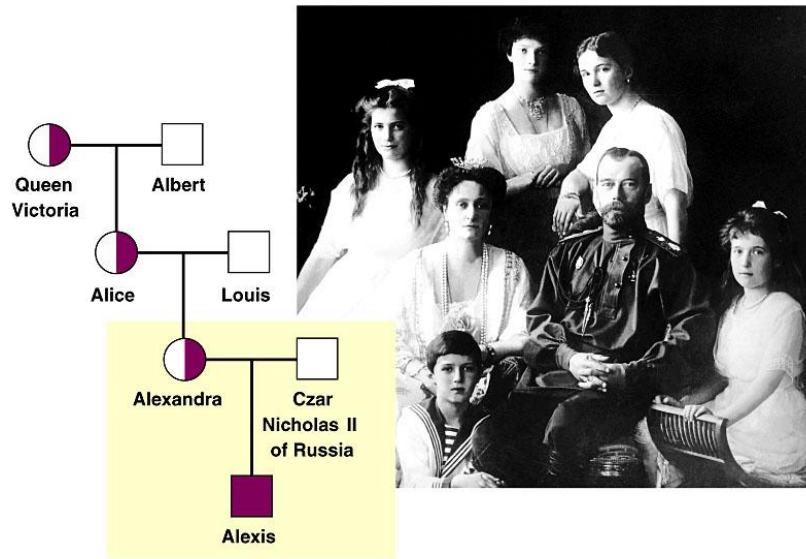
7. Define the chromosome theory of inheritance. Explain the chromosomal basis of the principles of segregation and independent assortment.

8. Describe T. H. Morgan's studies of crossing over and explain how Sturtevant created linkage maps. *Begin by labeling the diagram.*



9. Explain how sex is genetically determined in humans and the significance of the *SRY* gene. Explain how sex is determined differently in other organisms.

10. Describe the patterns of sex-linked inheritance, noting examples in fruit flies and humans.



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