

Chapter – 4 | Principles of Inheritance and Variation

QUIZ
PART-05

1. Mendel's work on inheritance of characters was published in:

- A. 1856 B. 1865
C. 1900 D. 1902 (B)

Explanation : Mendel published his work on inheritance of characters in 1865, but it remained unnoticed until 1900.

2. Chromosomal theory of inheritance was proposed by:

- A. Morgan and Darwin
B. Sutton and Boveri
C. Mendel and Morgan
D. Watson and Crick (B)

Explanation : Sutton and Boveri explained Mendel's laws by relating gene behaviour with chromosome behaviour.

3. The structures present in the nucleus that double and divide before cell division are called:

- A. Genes B. Proteins
C. Chromosomes D. Enzymes (C)

Explanation : Chromosomes are nuclear structures that duplicate and divide before cell division.

4. Mendel's laws were explained by chromosome movement during:

- A. Photosynthesis
B. Meiosis
C. Respiration
D. Fertilization only (B)

Explanation : Chromosome behaviour during meiosis explains segregation and independent assortment of genes.

5. Sutton and Boveri stated that chromosomes and genes:

- A. Occur singly
B. Occur in pairs
C. Never separate
D. Are unrelated (B)

Explanation : Both chromosomes and genes occur in pairs and segregate during gamete formation.

6. Thomas Hunt Morgan performed experiments on:

- A. Pea plant
B. *Drosophila melanogaster*
C. Maize plant
D. Bacteria (B)

Explanation : Morgan used fruit flies (*Drosophila melanogaster*) to experimentally verify chromosomal inheritance.

7. The physical association of two genes located on the same chromosome is called:

- A. Mutation B. Linkage
C. Recombination D. Segregation (B)

Explanation : Linkage refers to the physical association of genes present on the same chromosome.

8. The production of non-parental gene combinations is known as:

- A. Linkage B. Recombination
C. Dominance D. Mutation (B)

Explanation : Recombination produces new gene combinations different from parental combinations.

9. *Drosophila melanogaster* was suitable for Morgan's experiments because:

- A. It has a long life cycle
B. It produces very few offspring
C. Its life cycle completes in about two weeks
D. It has no genetic variations (C)

Explanation : *Drosophila* has a short life cycle of about two weeks and produces many offspring, making it useful for genetic studies.

10. Alfred Sturtevant used recombination frequency to determine:

- A. Protein structure
B. Gene distance on chromosome
C. DNA sequence
D. Cell division rate (B)

Explanation : Sturtevant used recombination frequency to create chromosome maps showing positions of genes.