GENETICS

---

1. Remembering:
- Explain Mendel's laws of segregation and independent assortment
- Define monohybrid, dihybrid, and trihybrid crosses
- Describe allelic interactions including dominant & recessive genes, incomplete dominance, codominance, pleiotropy, etc.
- Discuss non-allelic interactions such as epistasis, complementary genes, duplicate genes, and inhibitory genes
- Identify mechanisms of sex determination and sex linkage

2. Understanding:
- Compare and contrast different types of allelic interactions
- Explain the concepts of chromosome and genomic organization, including unique & repetitive DNA, chromosome morphology, and gene structure
- Analyze variations in chromosome structure and number
- Interpret genetic linkage, crossing over, and extrachromosomal inheritance

3. Applying:
- Solve problems involving monohybrid, dihybrid, and trihybrid crosses
- Predict the outcomes of test and back crosses
- Analyze chromosome mutations and their effects on gene expression
- Calculate genetic mapping based on crossing over data

4. Analyzing:
- Evaluate the impact of allelic interactions on phenotype
- Critically analyze the mechanisms of DNA damage and repair
- Compare and contrast different types of gene mutations and their causes

5. Evaluating:
- Assess the significance of Mendel's laws in modern genetics
- Evaluate the role of chromosome mutations in genetic disorders
- Debate the ethical implications of genetic testing and manipulation

6. Creating:
- Design an experiment to demonstrate the principles of Mendelian genetics
- Develop a model to illustrate the process of crossing over
- Propose a research study to investigate the effects of different mutagenic agents on DNA damage and repair