

EXAM EXPECTATIONS

MYP Biology

“Patterns of Inheritance”

STATE the Chromosome Theory of Inheritance

STATE that because Mendel's chosen traits all assorted independently the genes controlling these traits were likely (luckily) found on different chromosomes (they were not linked)

STATE that the ABO blood system is an example of multiple alleles

STATE that linked genes do not follow the Law of Independent Assortment

STATE the expected phenotypic and genotypic ratios of a dihybrid cross (assume complete dominance)

STATE Mendel knew nothing about DNA, genes or chromosomes when he did his famous work

STATE that the particulate hypothesis of inheritance has more support than the blending hypothesis

STATE the normal complement of sex chromosomes in males and females

STATE that some traits that are influenced by their environment

DEFINE locus (loci)

DEFINE progeny

DEFINE sex linked genes

DEFINE heterozygous

DEFINE homozygous

DEFINE hybrids

DEFINE true breeding

DEFINE tetrads

LIST reasons why pea plants were a good choice to use for studying patterns of inheritance

IDENTIFY a trait that is influenced by the environment

IDENTIFY pleiotropy and epistasis inheritance from a given example

IDENTIFY complete dominance, incomplete dominance and codominance inheritance from a given example

IDENTIFY the genotypic and phenotypic ratios of monohybrid crosses involving complete dominance, incomplete dominance and codominance

IDENTIFY genotypes and phenotypes from a punnet square

OUTLINE pleiotropy

OUTLINE epistasis

OUTLINE multiple alleles

OUTLINE incomplete, codominance and complete dominance

OUTLINE homologs or homologous chromosomes

OUTLINE mitosis

OUTLINE meiosis

OUTLINE the Law of Independent Assortment

OUTLINE the experiment and results from Thomas Hunt Morgan (fruit flies and sex linked genes)

OUTLINE the Law of Segregation

OUTLINE natural selection

OUTLINE why linked genes do not follow the Law of Independent Assortment

OUTLINE differences between monohybrid crosses and dihybrid crosses

OUTLINE the inheritance of skin color in humans

OUTLINE the inheritance of Huntington's disease

OUTLINE a testcross and its purpose or role

OUTLINE the mechanism of crossing over, its results and its significance

ANALYZE a pedigree

ANALYZE a punnet square

DEDUCE possible gametes from a parental genotype

CONSTRUCT a punnet square with possible gametes and offspring

DESCRIBE sickle cell anemia

COMPARE the genotypic and phenotypic ratios of monohybrid crosses involving complete dominance, incomplete dominance and codominance

COMPARE homologous chromosomes

EXPLAIN where and when in meiosis that the Law of Independent Assortment occurs

EXPLAIN why the heterozygosity for the sickle cell trait is so unusually high

EXPLAIN why the Law of segregation applies only to sexually reproducing organisms

EXPLAIN why sex linked conditions are more common in males

EXPLAIN where and when in meiosis that the Law of Segregation occurs

DETERMINE the genotype of an individual using a pedigree

PREDICT the probability of phenotypes in offspring when given parental phenotypes

CALCULATE the probability of a trait in an individual using a pedigree

CALCULATE genotypic and phenotypic ratios from a punnet square

SUGGEST the most significant conclusion Mendel drew from his experiments on pea plants