EXAM 2 Review

Know and be able to distinguish: somatic and germ cells, haploid and diploid cells What are homologous chromosomes and what do they have to do with ploidy Know the basic mechanics (steps) of the two cell divisions that compose meiosis and how they produce the end result of the process (4 haploid cells)

Be able to define and distinguish: synapsis, chromatids, chromosomes, tetrad Know the important differences in both the processes and the outcomes of meiosis and mitosis

Be able to recognize differences between mitosis and meiosis from drawings of cells undergoing division.

Understand 3 ways that sexual reproduction promotes genetic variation Be able to define crossing over and independent assortment of chromosomes and how they promote genetic variation

Know the basic theory for inheritance before Mendel: the theory of blending inheritance, the theory of direct inheritance, and how Mendel's theory of inheritance differed from the earlier theories

Know what mono- and dihybrid crosses are and the expected ratios of phenotypes and genotypes from these crosses

be able to define and distinguish among the following terms:

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gene	dominant	homozygous	genotype	test cross
locus	recessive	heterozygous	phenotype	punnet square
allele	true breeding	hemizygous	karyotype	

homogametic, heterogametic

Know and understand in modern terms, Mendel's 4 laws Know what incomplete dominance and co-dominance are and how they are similar and different

Know the addition and product rules of probability and when to apply each to problems in patterns of inheritance

Know how each of the following change expected phenotypic and genotypic ratios: partial dominance (incomplete dominance and co-dominance)

more than 2 possible alleles at a locus (e.g. human ABO blood groups) polygenic inheritance (multiple loci affecting a single trait) sex linkage (X-linkage, Y-linked traits)

Know what autosomes and sex chromosomes are.

Recognize several different chromosomal and non-chromosomal mechanisms of sex determination.

Know the consequences of non-homology of the sex chromosomes for sex-linked inheritance (X-linked and Y-linked inheritance)

Know what sex influenced traits are.

Understand why traits determined by different loci on the same chromosome (linked traits) do not follow Mendel's rule of independent assortment

Know the proper way to write the genotypes of individuals with linked loci and the difference between coupling and repulsion

Know what crossing over is and how it affects the inheritance of linked traits Be able to recognize recombinant and parental types

Know how to calculate crossover value and know the relationship between the frequency of crossing-over and map distance

Epistasis: what is it, how is it similar to and different from dominance, how does it affect patterns of inheritance?

Pleiotropy: what is it, how is it similar to and different from linkage, how does it affect patterns of inheritance?

Be able to define each of the following and recognize how they affect the relationship between genotype and phenotype: Penetrance, Expressivity, Phenotypic plasticity

Be able to define mutation precisely and recognize different kinds of mutations.

Understand the range of consequences of mutations and why mutations differ in their consequences

Know the definitions of definition aneuploidy and non-disjunction and how they are related.

Be able to interpret a pedigree for the inheritance of a trait.

Recognize the benefits and limitations of pedigree analysis, sex chromatin screening, and karyotype analysis for diagnosing human genetic abnormalities.

BE ABLE TO WORK PROBLEMS LIKE THOSE ON THE SET I GAVE YOU