Bio212 Genetics

Exam I review Sheet

- Exams in this class ask you to demonstrate your knowledge of the subject matter that we have been discussing in class and you have been working on by going over the material and doing practice problems.

- The exam will consist of short answer questions and problems similar to the suggested problems/homework. None of the problems will be a surprise. They are all similar to things you have already worked on. *If you have prepared for the exam, the 55 minutes provided will be ample time to finish the exam. If you are not prepared, you may not finish the exam.*

- The practice exam questions have come from previous exams. They are good practice questions.

- This is not an exhaustive review sheet. It only outlines ideas that you should be familiar with.

- The best way to prepare is:
    - Do and understand all of the suggested problems in the book
    - Do and understand the homework assignment
    - Do and understand questions from the old exam
    - Understand the concepts listed below

You should be able to work the following types of problems:

- Monohybrid Crosses
- Dihybrid Crosses
- Probabilities
- Chi-squared test

You should be familiar with the following concepts:

- Meiosis vs Mitosis
- Homologous Chromosomes, Sister Chromatids
- Chromosome descriptions (Metacentric, etc.)
- Human Loci Nomenclature (p and q)
- Allele, Locus, Loss-of-function mutations (null, hypomorph), Gain-of-function mutations (hypermorph), Compound heterozygotes
- Types of DNA sequence changes (Base substitutions, insertions, and deletions)
- How DNA sequence changes translate to amino acid changes (nonsense, mis-sense, etc)
- Triplet repeat disorders like Huntington's; how the repeat numbers can change
- The relationship between a protein's function and the observed phenotype
- Be comfortable with the codon table
- Dominant, Recessive
- Independent Assortment
- Co-dominance, Incomplete dominance
- Sex Determination Systems (XX/XO, XX/XY, etc)
- Sex-linked Inheritance
- Dosage Compensation
- X-chromosome Mosaicism
- Sex Determination in Humans
- Phenylketonuria and Cystic Fibrosis