

Honor 3215, Fall 2008
Study Guide for Exam #1
Central Concepts

Below is a fairly comprehensive list of concepts and topics that will be covered in the first exam. You should be able to define each major concept and be able to describe how it works with other concepts. More information about each concept/topic is available in the readings and lecture notes. You will be expected to bring a clean BLUEBOOK to class on the day of the exam, September 25, 2008.

Basic Steps in Human Biological Development
Cells, Proteins (and Amino Acids), DNA
Importance of DNA
Discovery and Structure of DNA
Vitalism vs. material explanations of life:
(e.g., Morgan's flies, Pneumonia S and R, Muller's radiation.)
Complementarity
Central Dogma
Genes and Gene expression
(Promoters, transcription factors, alternative splicing, epigenetics, and environment)
Inheritance: Traits and some old theories
Mendel's patterns of heritability (Dominant, Recessive, Semi-dominant, Sex-Linked)
(Genotype and Phenotype ,Homozygous vs. Heterozygous)
Linkage and Chromosomes
Eugenics: The Idea and Its History
Positive and Negative Eugenics
Eugenic Policies (esp. in the US) and Carrie Buck
Genetic Essentialism: Determinism and Axiology
Mutations: how and types, neutral mutations, heritable mutations
Types of genetic diseases: mono-genetic, poly-genetic or multifactoral, chromosomal
(Know something about the diseases discussed and examples of mutation types involved)
Viruses and Gene Therapy (the basic ideas)
Promise of genetic tests (and types)
Genetic Risk, SNPs, and Gene Chips
Genetic Discrimination (definitions and arguments)
(Genetic Privacy and Justice)
GINA
Ethical Framework: Principles, Consequences, Interests
Moral Expressivism

Sample Questions:

1. What is the "secret of life"? Explain why it is the "secret".
2. What are the steps and processes summarized in the central dogma.
3. What is the (autosomal) recessive pattern of inheritance? Identify a disease discussed in class that fits this pattern.
4. What are neutral mutations? Why are most mutations neutral?
5. Give two examples of processes that control gene expression.
6. How can viruses help cure or treat some genetic diseases?
7. What is eugenics? What is the difference between positive and negative eugenics? What are the lessons we should learn from the history of eugenics?
8. What are the promises and perils of genetic tests? How does one assess genetic risk?
9. What is genetic discrimination? How is GINA meant to address the possibility of genetic discrimination?
10. What is moral expressivism?