

Study Guide for Final Exam in Bio 101

Ch 15.3 (11th edition pp323 to 325 and (12th 336- 338 only)

1. What are restriction enzymes?
2. What is gel electrophoresis and how does it work?

Ch 16 (not “specific protein-DNA interactions” in 16.2) (only X chromosome inactivation in 16.4, not 16.5)

1. Be able to describe the structure and regulation of the lac operon
2. Know the structure/replication of HIV.
3. What are enhancers and silencers?
4. What is X chromosome inactivation and how does it occur?
5. What is the genetic material in COVID-19?

Ch 17 (not details about specific non-human genomes, not haplotype mapping)

1. How are eukaryotic genomes different from prokaryotic genomes?
2. What's the size of the human genome? How many genes are in the human genome?
3. What are gene families? What are pseudogenes?
4. Be familiar with the structure of hemoglobin and the globin gene family
5. What are the different kinds of repetitive DNA in eukaryotes? What is their function?
6. What are transposons and retrotransposons?
7. What are proteomes and metagenomics?

Ch 18 (not details on specific vectors)

1. What is recombinant DNA and how is it made? What are reporter genes?
2. What is cDNA and how is it made?
3. What is CRISPR and how can it be used?
4. What are antisense RNA and siRNA and how are they used?
5. What are the major concerns of the public with respect to genetically altered crops?

Ch 7 (not lipid derived second messengers, not Calcium ions)

1. What is signal transduction?
2. What are the properties of receptors and ligands? What are agonists and antagonists?
3. What are the different types of receptors and where are they located?
4. Be able to describe how acetylcholine, insulin, and steroid hormones work.
5. How does epinephrine affect glycogen metabolism?
6. What is cAMP? How is it made? What does it do?
7. What are G protein coupled receptors? How do they work?
8. What is NO? How do nitroglycerin and sildenafil affect NO signalling?