

Bio 470 Cell Physiology Exam II Study Guide

Terms to know:

5' to 3'
Acetyl-CoA
Antenna
ATP Synthase
Avery
Barrier DNA
Calvin Cycle
Centromere
Chlorophyll
chromatin
Citric Acid Cycle
Dark reactions
DNA Helicase
DNA Ligase
DNA Polymerase
DNA Primase
DNA replication
Electron carriers
Euchromatin
Exonuclease
FADH₂
Fat
Fermentation
Gene
Gene expression
Genome
Gluconeogenesis
Glyceraldehyde 3-
Phosphate
Glycogen
Glycolysis
Griffith
Hershey and Chase
Heterochromatin
Histones
Intermembrane space
Interphase
Interspersed sequences
Karyotype
Kreb's Cycle
Lagging strand
Leading strand
Light reactions
Mitochondrial matrix
Mitosis
Mutation
NADH
NADH Dehydrogenase
NADPH
Nucleosome
Okasaki fragments
Oxidative phosphorylation
Photosynthesis
Photosystems I & II
Plasmid
Proofreading
Proton gradient
Proton motive force
Pyruvate
Pyruvate Dehydrogenase
Reaction center
Replication forks
Replication origin
RNA primer
Semi-conservative
replication
Single-stranded Binding
Proteins
Rubisco
Sliding clamp
Starch
Stroma
TCA
Telomerase
Telomeres
Template
Thylakoid
Thylakoid membrane
Topoisomerase
Transcription
Translation
Ubiquinone
Watson and Crick

Concepts to know:

- Know the structure of DNA and its nucleotides.
- When given a sequence of DNA, be able to draw the complementary strand sequence.
- Be able to give an overview of how DNA was found to be the basis of inheritance and give the details of one experiment.
- Be able to explain what a nucleosome is and know its structure.
- Know which histones are found in the nucleosome core and which act as linkers.
- Be able to explain what semi-conservative replication is and how it was discovered to be the correct model for DNA replication.
- Be able to list the ways that chromatin remodeling complexes can remodel the DNA and understand what their function is.
- Understand how interphase chromatin is organized in the nucleus and how it is condensed to regulate its expression.
- Know the different enzymatic activities of DNA Polymerase.
- Be able to describe the steps involved in DNA replication, giving the proteins involved and where it takes place.
- Be able to state what the problem is with replicating the ends of the chromosomes explain how Telomerases fix this problem.
- Be able to explain why it is advantageous for cells to release the energy found in glucose and other fuel molecules in a stepwise fashion instead of all at once.
- Be able to give an overview of Glucose Metabolism. Be able to list the products of each step, how many ATP and reduced energy carriers are produced, and where the reactions occur. Be able to account for all 38 ATP produced, both directly and indirectly.
- Know the difference between glycolysis and gluconeogenesis and be able to give a way that cells can regulate the activity of the enzymes of these pathways.
- Be able to compare and contrast the Electron Transport System in the mitochondria and in chloroplasts.
- Be able to compare and contrast Photosynthesis with Glucose Metabolism. Know the substrates and products of each, the activated carriers and final electron acceptors, and be able to name some of the key enzymes involved.
- Be able to give an overview of Photosynthesis.
- Be able to explain what a proton gradient is, how it is formed by the enzymes of the ETC, and how it is used to drive ATP synthesis.