

Exam #2 Study Guide

Use your book as a reference if you don't understand something, or better yet, ask me!

Photosynthesis – only worry about 2nd stage

How are the processes of aerobic respiration and photosynthesis linked?

What happens during the 2nd stage of photosynthesis: what is produced/released/etc.?

What's another name for the second stage of photosynthesis?

How does glucose get formed? How does the Calvin-Benson cycle work?

What are autotrophs and heterotrophs?

CELLULAR RESPIRATION

What happens in glycolysis? Where does it occur?

Where does aerobic respiration occur? How many ATP are produced in total from one molecule of glucose?

What are the 3 stages of aerobic respiration?

What are the products from each stage of aerobic respiration? How many carbons in pyruvate?

How many ATP are produced at each stage?

How many NADH/FADH₂ are produced at each stage?
When is carbon dioxide released?

What is the final electron acceptor?

What are the 2 stages of glycolysis? How many ATP? How many NADH?

Where does the second stage of aerobic respiration occur? What happens to pyruvate before it enters the Krebs cycle? What happens during acetyl-CoA formation? How many ATP? How many NADH? How many FADH₂ are produced in the second stage?

What's the total amount of reduced coenzymes from the first two stages?

Where do these reduced coenzymes go? What's this stage called?

What combines with acetyl co-A (how many carbons?) to make the next compound (how many carbons?)? What is the next compound? (how many carbons?)

What travels along with the electrons? What is the significance of this in regards to the gradient?

How is ATP produced? How does this gradient cause this? What do those ions have to travel through?

What does anaerobic mean? How are anaerobic pathways different from aerobic pathways?

What are the two different kinds of fermentation pathways? How much ATP is produced from each? What's the end product from each?

How are photosynthesis and aerobic respiration linked?

MITOSIS

What is the difference between mitosis and meiosis? Where do these processes occur? What are the results from each?

Proteins associated with DNA in eukaryotes are called _____.

Histone–DNA units are called _____.

Chromatids that are attached at the centromere are called what kind of chromatids?

What are the different parts of the cell cycle? Which is the longest part? What are the 3 parts of this phase?

When does DNA replication occur/When are chromosomes duplicated?

How many chromosomes are found in a human cell? What does diploid mean?

The spindle apparatus is made of _____. What's the centrosome?

What is the definition of mitosis? What happens during each phase of mitosis? What is the proper sequence of phases?

What is cytokinesis? How does it differ in plant and animal cells?

MEIOSIS

What are the results from sexual and asexual reproduction? Which one leads to more variability?

What are genes? What are alleles?

What is meiosis? How is it different from mitosis?

What happens during the various stages of meiosis (both I and II), and what results from the process?

Which two events in meiosis cause variation in traits? How do these events work?

What are homologous chromosomes?

What is the difference between Meiosis I and Meiosis II?

GENETICS

Who is Gregor Mendel? Why was his choice of using the garden pea plant a good one?

What's a hybrid?

What are genes? What are alleles? What are mutations?

What does homozygous mean? Heterozygous? Dominant? Recessive? How would you write the genotype of these?

What is genotype? What is phenotype?

What was Mendel's theory/law of segregation? How does this relate to meiosis? What kind of experiments was this theory based on?

What is a monohybrid experiment? What's a dihybrid experiment?

How is the parental generation displayed? What about first and second generation offspring?

What is a monohybrid cross? What are the results in F_1 ? What about F_2 ? What's the phenotypic ratio in F_2 ?

Know how to do crosses!!! Punnett Squares!!!

What is Mendel's theory of independent assortment? What was this based on? How does this relate to meiosis?

What is a dihybrid cross? What are the results in F_1 ? What about F_2 ? What's the phenotypic ratio in F_2 ? Be able to do a dihybrid cross!!!

What are codominant alleles? What's an example?

What's incomplete dominance?

Can the environment affect the phenotype?

What is continuous variation? Give an example!

What are the following genetic abnormalities? Down Syndrome. Klinefelter Syndrome. Turner Syndrome.

DNA Replication

What's the structure of DNA? Who discovered it? What's it composed of? What holds the two strands together? Where are the strands bonded? What's a nucleotide composed of?

What are the four nucleotides found in DNA? What are the rules of base pairing for those nucleotides?

What are Chargaff's rules?

How does DNA replicate itself? What are the function of DNA helicase, DNA polymerase and DNA ligase?

How are there not more errors in the replication of DNA? What happens if the repair mechanism fails in the replication process?

Why is it said that DNA replication is semi-conservative? Why is it said that DNA replication is partially discontinuous?

What's a mutation? What's the difference between a mutation in germ cells vs. somatic cells?

DNA to PROTEINS

What is transcription? What is translation? What are the products from each process? Where does each occur?

What does RNA polymerase do?

What are the 3 types of RNA? What do they do? Which ones function in transcription? Which ones in translation?

What are some differences between RNA and DNA?

How is base pairing different in RNA?

What's a promoter?

What are introns and exons?

What's a codon? What's an anticodon? Where can you find these?

How many amino acids are there? How many codons code for them? Can an amino acid be specified by more than one codon? What else can codons code for? How many? Know how to read the genetic code sheet to tell you which amino acid the codon is coding for!

What's always the 1st amino acid in new polypeptide chains? What's its codon?

What are the 3 stages of translation? What happens in each stage?

What are insertions, deletions, and base-pair substitutions? What are transposable elements?

What's a frameshift mutation?