

Chapter Four
DNA Replication, Cell Cycle, & Protein Synthesis (W2025)

DNA Replication & Cell Cycle

1. What type of cell division is meiosis? What happens to the chromosome number during meiosis? What type of cells in human body use this type of cell division?
2. What type of cell division is mitosis? What happens to the chromosome number during mitosis? What type of cells in human body use this type of cell division?
3. How many chromosomes are in a human somatic cell? Where do these chromosomes come from?
4. What is the difference between a diploid and haploid cell? Significance?
5. What is a zygote? Chromosome number?
6. What are the two cell cycle phases in mitosis? What must happen in order to make two similar cells? When does this happen during the cell cycle?
7. What is the difference between chromosomes and chromatin? When are these terms used?
8. What is the significance of an allele pair?
9. What are autosomes? How many? What are sex chromosomes? How many?
10. What chromosome pair define male? Female?
11. What is the significance of the Law of Complementary Base Pairing? How is it used? When?
12. What is the significance of the Law of Semi Conservative Replication? How is it used? When?
13. What are DNA's four nucleotides? What chemical bond hold the nucleotide together? Significance?
14. What three enzymes are used to replicate DNA? Function?
15. What are the three stages of interphase? What occurs in each phase? How long does it take to duplicate all 46 chromosomes? When will a cell be in "G zero"?
16. What occurs during the mitotic phase?
17. What five conditions must be met before a cell may undergo mitosis?
18. What is contact inhibition?
19. What has more genes, a human or corn? What type of molecule is made by the information encoded in a gene?

Protein Synthesis

20. How is information transferred from DNA to protein?
21. What is transcription? Where does this occur? What turns this on and off? What may influence transcription?
- 22.. What is translation? Where does this occur?
23. What three types of RNA are used to make protein? Function of each?
24. What is the difference between a functional protein and a structural protein?
25. What is the function and location associated with these terms: base triplet, codon, anticodon?
26. How can you tell if a nucleic acid is DNA or RNA?
27. Where is the location for protein synthesis? What ribosomes are used if the protein will be exported outside of the cell? What ribosomes are used if the protein will be used inside of the cell?
28. What is the structure of a ribosome? How many bonding sites are on a single ribosome? What is the relationship between mRNA and a ribosome? How many ribosomes may be placed on a single strand of mRNA? Significance?
29. How is information transferred from DNA to a protein?
30. What is the difference between a transport vesicle and a secretory vesicle?