

Unit 4: DNA and Protein Synthesis
PowerPoint Questions

DNA and Genes

1. What are genes and what do they code for?
2. How do cells use proteins?
3. Proteins are made of chains of _____.
4. The group that makes amino acids different from each other & gives the amino acid its unique properties is called the _____ group.
5. DNA is found in the _____ of a cell and begins the process of making a _____.
6. Where are proteins made?
7. The first step in making a protein is to make a copy of _____ in the nucleus.

RNA

8. What nucleic acid contains the master code for making proteins?
9. What nucleic acid acts as a blueprint in copying the master code?
10. Compare and contrast the sugars on DNA and RNA.
11. Compare and contrast the nitrogen bases on DNA and RNA.
12. RNA is made of a _____ strand, while DNA is a _____ stranded molecule.
13. What base replaces thymine on RNA?
14. What is the function of mRNA?
15. What is the function of rRNA?
16. What is the function of tRNA?
17. Describe the shape of mRNA.

18. How does mRNA get out of the nucleus once it has copied DNA's instructions?
19. What bases pair together on RNA?
20. How long is mRNA?
21. What is a codon?
22. Methionine is called the _____ codon & is represented by the bases _____.
23. Name the 3 stop codons.
24. How long in rRNA?
25. What is the shape of rRNA?
26. What process occurs at the ribosomes?
27. Each codon stands for an _____.
28. Can amino acids have more than one codon?
29. There are _____ amino acids and _____ possible codons.
30. Use the genetic codon table and name these amino acids:

GGG?
UCA?
CAU?
GCA?
AAA?
31. Name the complementary bases on DNA.
32. Name the complementary bases on RNA.
33. What is the shape of tRNA?
34. What can attach to one end of a tRNA molecule for transport?
35. Opposite the attachment site on tRNA are 3 nucleotide bases called the _____.
36. A codon on mRNA is complementary to an _____ on tRNA.
37. What anticodon is complementary to the codon - ACU?

Transcription and Translation

38. Sketch the pathway to making a protein.

39. Define protein synthesis.

40. Name the 2 phases of protein synthesis.

41. Define transcription and tell where it occurs.

42. What RNA copies DNA? Are both strands of DNA copied? What enzyme is required to copy DNA?

43. The DNA strand that is copied is called the _____ strand.

44. What would be the complementary RNA sequence for the DNA sequence- 5'- GCGTATG-3'?

45. What enzyme separates the DNA strands in transcription?

46. RNA polymerase adds complementary _____ to the DNA template strand.

47. _____ are regions on DNA where RNA polymerase binds to start transcription.

48. The promoter contains a sequence called the _____ box.

49. Other sequences on DNA called _____ signals tell the RNA polymerase when to stop transcribing.

50. Newly made mRNA must be _____ to make the nucleic acid functional.

51. What are introns & what happens to them during mRNA processing?

52. What are exons and what happens to them during mRNA processing?

53. Describe the cap that is added to the new mRNA transcript.

54. What type of tail is added to the mRNA transcript?
55. The new mRNA transcripts is made of _____ with a 5' _____ and a 3' _____ tail.
56. Define translation & tell where it occurs?
57. How do ribosomes read mRNA?
58. Describe the structure of a ribosome.
59. Ribosomes are composed of _____ rRNA and _____ protein.
60. Ribosomes have 2 tRNA sites called _____ and _____ along with an **exit site**.
61. The first part of translation is called _____.
62. The small ribosomal subunit attaches to what codon on mRNA?
63. Once the mRNA and small subunit attach, what happens next?
64. The _____ moves along the mRNA strand _____ codon at a time.
65. How many tRNA's will fit into a ribosome at one time?
66. The joining of amino acids by _____ bonds is the second part of translation called _____.
67. When a tRNA leaves the ribosome, the ribosome moves down the _____ strand allowing another _____ and its amino acid to enter.
68. each time the ribosome moves, it moves over _____ codon.
69. The last stage of translation is called _____.
70. The sequence of amino acids in the polypeptide chain is called the _____ protein structure.