

Biology

EXAM 6 REVIEW: DNA & Protein Synthesis

This review is a guide to help you prepare for your exam. You should also review all notes, assignments and any other work completed in this unit. Simply memorizing the answers to the questions on this review will NOT guarantee success on this exam. You must thoroughly understand and be able to APPLY the information covered in this unit. ALL information covered in the unit is fair game for the exam, even if it was not specifically mentioned on this review.

DNA

1. Draw a nucleotide and label each component
2. Which molecules make up the backbone (sides) of DNA?
3. Where is DNA located in eukaryotic cells?
4. What is the name of the process that creates a copy DNA?
5. What is the result (be specific) of the process named in #4?
6. When given the following DNA sequence AGCTTCGGA, write the complementary bases.
7. When does DNA replication take place?
8. What structural characteristic do proteins and nucleic acids have in common?

RNA vs DNA

9. Compare and contrast DNA and RNA.
10. List the three types of RNA **and** describe their function/role. Which types of RNA are involved in protein synthesis?

Protein Synthesis

11. What is a codon and what is an anticodon?
12. How many **codons** are needed to create a chain of 6 amino acids?
13. A DNA strand that has the bases GGTCGAATCCGT will code for how many amino acids?
14. During translation, what determines which amino acid is added to the growing polypeptide?
15. In which part of the cell does **transcription** take place?
16. In which part of the cell does **translation** take place?
17. What does the figure below show?

		Second letter					
		U	C	A	G		
First letter	U	UUU Phenyl-alanine UUC UUA Leucine UUG	UCU Serine UCC UCA UCG	UAU Tyrosine UAC UAA Stop codon UAG Stop codon	UGU Cysteine UGC UGA Stop codon UGG Tryptophan	Third letter	U
	C	CUU Leucine CUC CUA CUG	CCU Proline CCC CCA CCG	CAU Histidine CAC CAA Glutamine CAG	CGU Arginine CGC CGA CGG		C
	A	AUU Isoleucine AUC AUA AUG Methionine; start codon	ACU Threonine ACC ACA ACG	AAU Asparagine AAC AAA Lysine AAG	AGU Serine AGC AGA Arginine AGG		A
	G	GUU Valine GUC GUA GUG	GCU Alanine GCC GCA GCG	GAU Aspartic acid GAC GAA Glutamic acid GAG	GGU Glycine GGC GGA GGG		G

PRINCIPLES OF LIFE, Figure 10.11
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Example DNA strand = **TAGCGGCATCG**

18. Write the **complimentary mRNA** strand from the above DNA strand.
19. Write the **amino acids** that will be translated from the DNA strand.