

Transcription and Translation

1. Transcribe the *template* DNA segment, 5' GCATCAGTC 3', into an mRNA segment.
2. Choose the *template* DNA sequences required to code for the amino acids *N-term* tyr-gln-his-val *C-term* (tyrosine-glutamine-histidine valine).
 - a. 5' AAC GTG ATG ATA 3'
 - b. 5' GAC ATC GTG GTA 3'
 - c. 5' TAC TAG TTG TTA 3'
 - d. 5' ATA CAG ATG CAC 3'
 - e. 5' AAC ATG TTG GTA 3'
3. If the genetic code used two bases or letters to form a codon or word, how many codons could be obtained?
 - a. 2
 - b. 4
 - c. 8
 - d. 16
 - e. 64
4. The sequence of amino acids in protein synthesis is determined by the sequence of:
 - a. Enzymes
 - b. Codons
 - c. Ribosomes
 - d. Polysaccharides
5. Determine the correct sequence from the 5 statements below:
 - a. mRNA attaches to a ribosome
 - b. The amino acids are joined together by an enzyme
 - c. Translation of mRNA by tRNA
 - d. mRNA is transcribed for DNA

The correct sequence for protein synthesis is:

- a. d-c-a-b
 - b. d-a-b-c
 - c. c-a-d-b
 - d. c-d-a-b
 - e. d-a-c-b
6. When mRNA is synthesized on a DNA template it is known as:
 - a. Translation

- b. Conjugation
 - c. Transfer
 - d. Transcription
7. Translation is the synthesis of:
- a. RNA on a DNA template
 - b. Protein using mRNA as a guide
 - c. DNA on a DNA template
 - d. Ribosomal protein using tRNA
8. The ribonucleotide triplet "ACC" is said to "code for the amino acid threonine." This means that
- a. The ribonucleosides, adenosine and cytidine, are required for the biosynthesis of threonine
 - b. ACC is a shorthand way of writing the covalent structure of threonine
 - c. Addition of the trinucleotide ACC to certain cells causes them to produce threonine
 - d. The transfer RNA to threonine probably contains the complementary codeword, UUU
 - e. When the nucleotides GGT appear together as a codon in a strand of template DNA, threonine appears in a particular location in the polypeptide for which the DNA is coding.
9. Genes carry information. This information is primarily determined by the:
- a. Base pairing G=C, A=T
 - b. Base sequence G-C-A-T, etc.
 - c. Base relationships in the coil of the double helix with 10 bases in 34 angstroms
 - d. Bases binding with proteins
10. A particular template DNA base sequence is 5'GCTCAGTTCATA3'. What amino acids are coded by this sequence?
11. What does transcription involve?
- a. Attachment of mRNA to a ribosome
 - b. Synthesis of RNA on a DNA template
 - c. Changing from the genetic code to an amino acid sequence
 - d. Movement of mRNA to the cytoplasm
12. What is the function of messenger RNA in proteins synthesis?
- a. Determines which amino acids will add to which tRNA
 - b. The formation of ribosomes
 - c. Determines sequence of amino acids

d. Replicates DNA