

BIOL 12 DNA QUESTIONS

1) The triplet code of M-RNA is called the codon, the complementary on the T-RNA's the anticodon. Suppose that a piece of transcribing DNA has the following arrangement of Nucleoides:

A T G G G A C T T A C A C C T A G G

- What will be the nucleotide sequence of M-RNA?
- What RNA's will be necessary for protein formation?
- Determine the nature of the polypeptide to be formed.
- Produce a mutation that would cause a change in the sequence of amino acids in the protein produced:
(1) Give the new arrangement of nucleotides on the transcribing DNA. (2) Give nucleotide Sequence of M-RNA
(3) The T-RNA's necessary for protein formation and (4) The nature of the polypeptide formed.

2)

A DNA double helix of the composition

A - T
T -
C - G
G - C

produces RNA which has a base ratio 25%A: 25%U: 25%C: 25%G. Can you distinguish whether the RNA is formed from one or both strands of this DNA?

3)

A particular DNA base sequence transcribed into messenger RNA is

T T A, T C T, T C G, G G A, G A G, A A A, A C A

- if reading begins at left, what amino acids are coded by this sequence?
- if treatment caused a mutant in the first nucleotide to G C G, what changes will occur in the first six amino acids coded by this sequence?

4)

Assign an amino acid to each triplet in the following sequence:

-A U G G U G G U U G U A U G U

- A G U U U G U U A A U C U A U

5)

You have a gene in E coli which specifies a protein, part of whose sequence is:

A L A - P R O - T R Y - S E R - G L U - L Y S - C Y S - H I S

- What is the DNA sequence specifying this part of the protein?

You recover a mutant which produces this part of the protein with the following sequence:

A L A - P R O - G L Y - V A L - L Y S - A S P - C Y S - H I S

- What is the DNA sequence specifying this part of the protein?

