

Study Guide for the DNA Test

Relax – we'll complete this over several days.

1. Structure of DNA

- What are the building blocks of DNA called? _____
What are the three parts? _____, _____, and _____.
- What is the sugar of DNA? _____ of RNA? _____
- What two parts of the nucleotide are in the backbone? _____ and _____.
- What is the correct name for the shape of DNA? _____.
- What are the four nitrogen bases in DNA? _____, _____, _____, and _____. Which one replaces thymine in RNA? _____.
What base pairs with G? _____ A? _____ U? _____
- What is the process when DNA makes an exact copy of itself? _____.

2. Function (use) of DNA

- The process of transcription produces? _____.
- The process of translation produces? _____.
- What are the three types of RNA? _____, _____, and _____.
How does each of the three types of RNA help the cell in building proteins according to the DNA?
1. _____
2. _____
3. _____
With what organelle do proteins get built? _____
- If the codon on the mRNA strand that was being read was CUA, what would the anticodon that could bond to it be? _____ (think about this one)
What type of RNA has an anticodon? _____

3. Cancer

- How can a mutation affect the function of cells to make them cancer cells?

- What is cancer? _____
- What is a tumor? _____
- Why is fighting cancer more difficult than fighting bacteria? _____

If the following stretch of DNA gets **transcribed** what will the resulting mRNA look like?

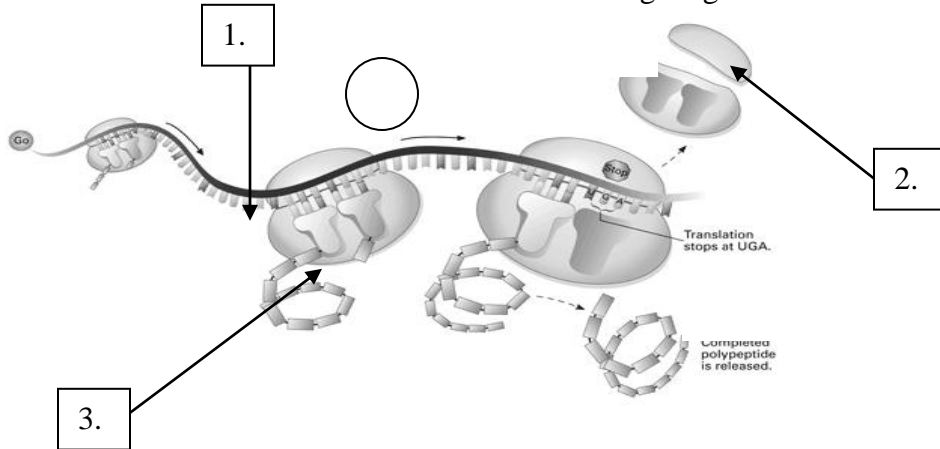
ATTCGGGGCATAT

Using the chart beside this question, if the following mRNA sequence would be converted to Amino Acids what would the chain of amino acids be? Place a hyphen between each amino acid.

AUGAAACAUCUCUGA

| | | Second base in codon | | | | |
|---------------------|---|---|--------------------------------------|--|---|---------------------|
| | | U | C | A | G | |
| First base in codon | U | UUU } Phe UUC } UUA } Leu UUG } | UCU } UCC } Ser UCA } UCG } | UAU } Tyr UAC } UAA Stop UAG Stop | UGU } Cys UGC } UGA Stop UGG Trp | U C A G |
| | C | CUU } CUC } Leu CUA } CUG } | CCU } CCC } Pro CCA } CCG } | CAU } His CAC } CAA } Gln CAG } | CGU } CGC } Arg CGA } CGG } | U C A G |
| | A | AUU } AUC } Ile AUA } AUG Met or start | ACU } ACC } Thr ACA } ACG } | AAU } Asn AAC } AAA } Lys AAG } | AGU } Ser AGC } AGA } Arg AGG } | U C A G |
| | G | GUU } GUC } Val GUA } GUG } | GCU } GCC } Ala GCA } GCG } | GAU } Asp GAC } GAA } Glu GAG } | GGU } GGC } Gly GGA } GGG } | U C A G |
| | | | | | | Third base in codon |

Label the 3 different kinds of RNA in the following diagram.



Vocabulary for the test – be able to compare/contrast related terms!

1. codon
2. Anticodon
3. deoxyribonucleic acid (DNA)
4. mutation
5. nucleotide
6. replication
7. ribonucleic acid (RNA)
8. transcription
9. translation

Central Dogma

Fill in the following flowchart with information about the central dogma of Biology. *Hint: the arrows represent the names of a process*

