

## DNA, RNA, and Protein Synthesis (Unit 6) Practice SOL Questions

**What did Rosalind Franklin contribute to the understanding of DNA molecules?**

- A An image indicating the shape of a DNA molecule
- B An analysis of the chemical makeup of a DNA molecule
- C A thought that DNA carries genetic information
- D A theory about how DNA conveys genetic information

**The weakness of hydrogen bonds between the bases of DNA allows —**

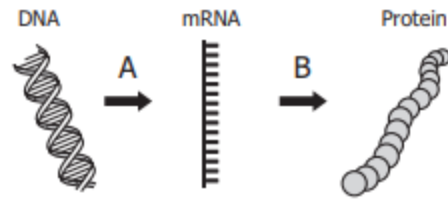
- A rearrangement of the sequence of bases to take place
- B base pairs to separate during transcription and replication
- C new bases to be incorporated into the DNA molecule
- D conversion of bases to amino acids in the event of cell starvation

**The model of DNA used today was proposed by James Watson and Francis Crick in 1953. In this model, what sequence of bases would be complementary to A-G-C-T-A?**

- F A-G-C-T-A
- G C-G-C-A-T
- H A-T-C-G-A
- J T-C-G-A-T

**In 1950, Erwin Chargaff discovered that the percentage of adenine in DNA equals the percentage of thymine, and that the percentage of cytosine equals the percentage of guanine. This proved invaluable to the eventual discovery of which aspect of DNA?**

- A Location
- B Solubility
- C Structure
- D Volume



**In eukaryotic cells, the process indicated by arrow A occurs in the —**

- F** cytoplasm
- G** ribosome
- H** nucleus
- J** cell membrane

**Medicines are being produced using recombinant DNA technology. For veterinarians, the use of this DNA technology will result in —**

- A** decreasing the number of antibodies produced by pets
- B** altering the chromosomes of healthy pets
- C** making more treatments available for pets
- D** identifying new diseases spread by pets

**Scientists can use genetic information to identify people because it is unique to each person. Which specific characteristic is unique to an individual?**

- F** The shape of the DNA molecules in cells
- G** The number of chromosomes in each cell
- H** The sequence of DNA nucleotides in cells
- J** The size of each chromosome in a cell

**-ACGAT-**

**The base sequence of an RNA strand that complements this DNA base sequence is —**

- F** -TGCTA-
- G** -ACGAT-
- H** -ACGAU-
- J** -UGCUA-



### DNA Base Sequence Comparison

Human	AGG CAT AAA CCA ACC GAT TAA
Chimpanzee	AGG CCC CTT CCA ACC GAT TAA
Gorilla	AGG CCC CTT CCA ACC AGG CCA

This chart compares the base sequences of homologous segments of DNA from three primates. Based on this information, how many differences in the resulting amino acid sequences would you expect to find between humans and chimpanzees?

- A 2
- B 3
- C 4
- D 6

Amino acids link together by peptide bonds to form proteins. In which cellular organelle would this process occur?

- F Mitochondrion
- G Ribosome
- H Lysosome
- J Golgi body

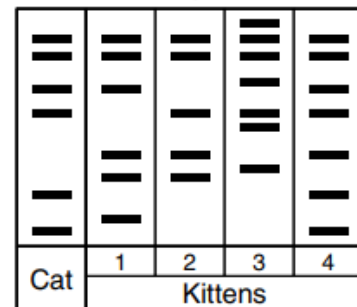
The Human Genome Project was begun in 1988 by scientists from 13 nations as a worldwide effort to understand the sequencing of all of the DNA in the human body. What is one potential scientific benefit of this research?

- F It will help to explain human cultural differences.
- G It will create communication between research centers.
- H It will help find the genes responsible for many diseases.
- J It helps to classify man most accurately in the animal kingdom.

The parts of DNA that provide the code for proteins are the —

- F sugars
- G phosphates
- H hydrogen bonds
- J nitrogenous bases

### DNA Fingerprints



The picture shows a segment of DNA from a cat. Which of these is most likely the kitten of this cat?

- A 1
- B 2
- C 3
- D 4