Name Date Class

BioDigest 4

Genetics

Content Mastery

Get the Big Picture

Read the paragraphs in the boxes. Then answer the questions.

From the smallest, simplest bacterium to you, all organisms have DNA. DNA is a chemical that stores the blueprints for each individual organism. DNA determines what each organism looks like and how it functions.

DNA is passed from parent to offspring. For example, ducks pass the information required to grow into ducklings to their young in DNA molecules. Your parents passed all the information needed for you to grow into a human adult to you in DNA molecules. The information about the color of your eyes is contained in DNA you received from your parents. This process is called heredity.

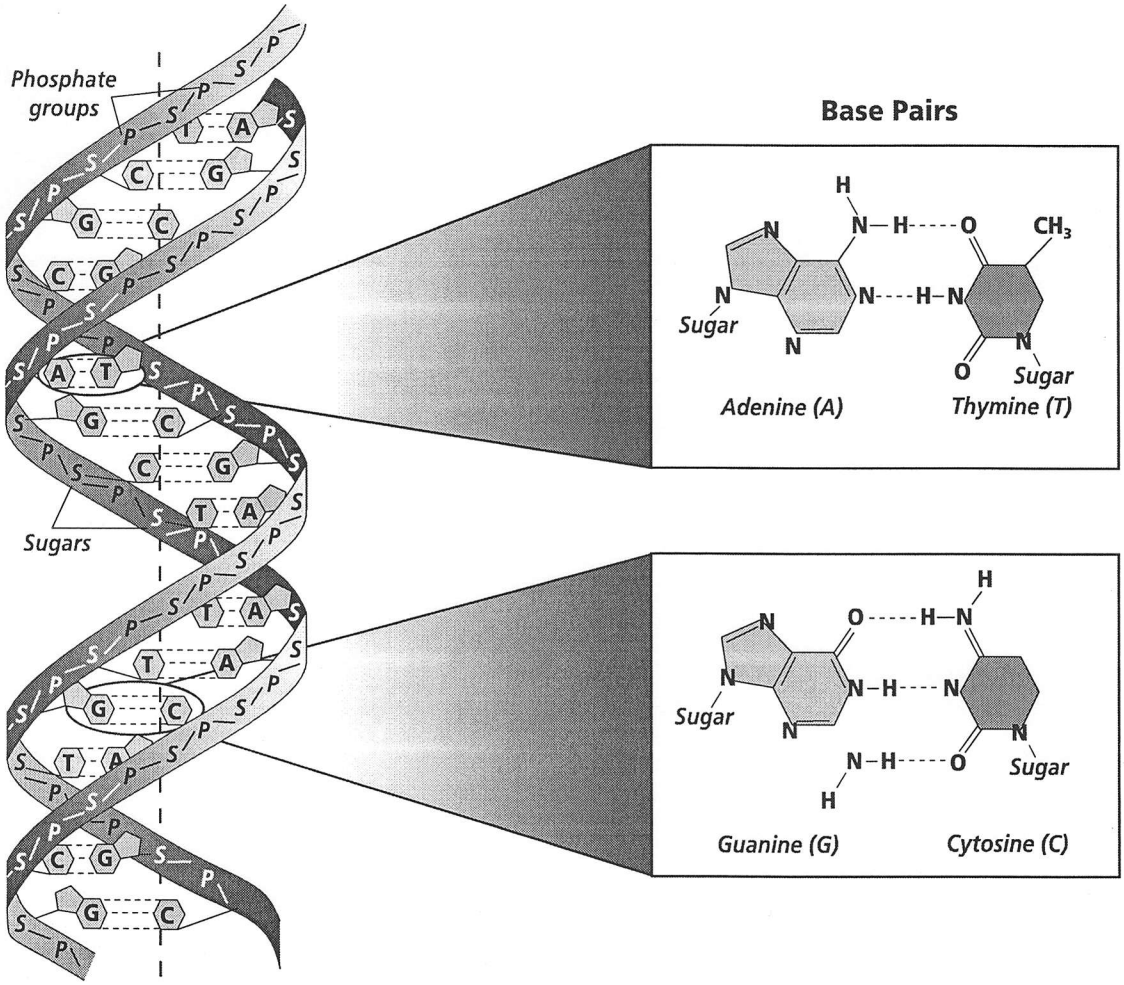
1. What is DNA and why is it important?

2. Explain why ducks produce ducklings and not piglets when they reproduce.

3. List three traits that you probably inherited from your parents. Explain why you think you inherited these things from your parents.

Study the Diagram

Study the diagram. Then answer the questions.



1. The diagram above shows the shape of a DNA molecule. How would you describe the shape of this molecule?

2. If the DNA molecule were compared to a spiral staircase, which parts would make up the rails of the staircase?

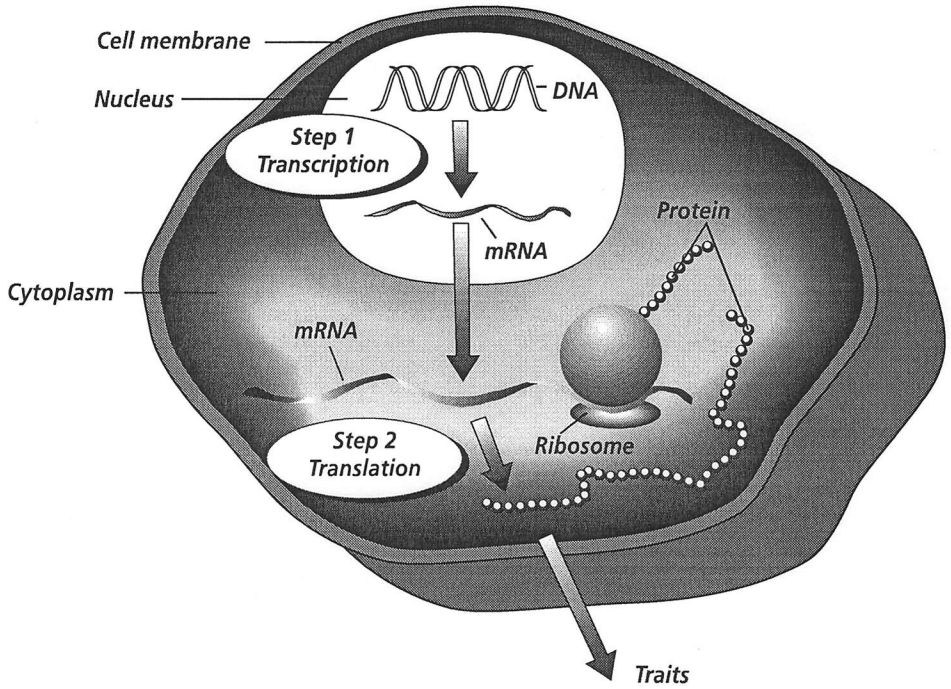
3. If the DNA molecule were compared to a spiral staircase, which parts would make up the steps of the staircase?

4. Which bases tend to pair together?

Study the Diagram

Read the paragraph in the box and study the diagram. Then answer the questions.

How does DNA convey its information? It converts its information into chemical messengers, called messenger RNA (mRNA), which are then translated into proteins. These proteins affect the appearance and the internal workings of an organism.



1. List two steps that are needed to convert information in DNA to proteins.

2. Where does transcription take place in a cell?

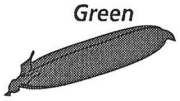
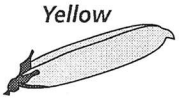
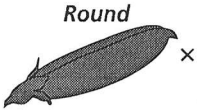
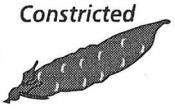
3. Where does translation take place in a cell?

4. If your eyes are brown and your brother's eyes are blue, what can you conclude about your and your brother's DNA for eye color and proteins?

Study the Table

Study the table. Then answer the questions.

Dominant vs. Recessive

Trait				F_1 Offspring
Flower color	*Purple* 	×	*White* 	=	*Purple (purple flower)*
Pea color	*Yellow* 	×	*Green* 	=	*Yellow (yellow pea)*
Pea texture	*Round* 	×	*Wrinkled* 	=	*Round (round pea)*
Pod color	*Green* 	×	*Yellow* 	=	*Green (green pea pod)*
Pod texture	*Round* 	×	*Constricted* 	=	*Round (round pea pod)*
Flower height	*Tall* 	×	*Short* 	=	*Tall (tall pea plant)*

1. Look at the crosses shown in the table above. Do the offspring favor the pea plant with the dominant trait or the recessive trait? _____

2. What happens to the alleles for the recessive traits in the offspring? Are they still represented in the offspring's DNA?

_____

_____

3. How could you demonstrate whether the purple-flowering offspring have the allele for white flowers?

_____

_____

_____

4. If you crossed two tall offspring, how many pea plants would be short? _____