

## 16 Multiple choice questions

Term

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Which **best** summarizes the scientific process that led to our current understanding of DNA?

- The most important contributions were made within the same time period of the late 1800s.
- Scientists built on the previous work of other scientists to make new discoveries.
- Each scientist made an important, but unrelated, contribution.
- Most of the discoveries were made by chance and did not depend on prior knowledge.

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Which important property of DNA did Friedrich Miescher discover?

- It is made partly of sugar molecules.
- It has a double-helix structure.
- It is three-dimensional.
- It is found in the nucleus of a cell.

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Which scientist discovered DNA after experimenting with white blood cells?

- Watson
- Franklin
- Miescher
- Wilkins

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Which label **best** represents the area marked Y?

chromosome  
protein  
gene  
DNA

- DNA
- chromosome
- protein
- gene

Term

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What is the twisted ladder shape of the DNA called?

- nucleotides
- double helix
- 3-D model
- single strand

Term

What causes the differences in physical characteristics like hair color among people?

- variations in DNA length**
- variations in cell nucleus size**
- different numbers of chromosomes**
- different versions of genes**

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Before DNA was discovered, in which materials did scientists think the genetic material was stored?

- nucleic acids**
- carbohydrates**
- proteins**
- lipids**

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What are the building blocks of proteins?

- tRNA molecules**
- amino acids**
- chromosomes**
- ribosomes**

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Which **best** describes the storage of the genetic code?

- A DNA molecule is a segment of a chromosome, a chromosome makes up a gene, a gene is inside a cell, and a cell is contained within a nucleus.**
- A DNA molecule is a segment of a gene, a gene makes up a chromosome, a chromosome is inside a cell, and a cell is contained within a nucleus.**
- A gene is a segment of a chromosome, a condensed chromosome makes up a DNA molecule, a DNA molecule is inside a nucleus, and a nucleus is contained within a cell.**
- A gene is a segment of DNA, a condensed DNA molecule makes up a chromosome, a chromosome is inside a nucleus, and a nucleus is contained within a cell.**

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Which **best** compares DNA and RNA with regard to the process of protein production?

- RNA leaves the nucleus during the process and DNA remains in the nucleus.**
- DNA transforms from a nucleic acid into a protein, and RNA remains a nucleic acid.**
- RNA transforms from a nucleic acid into a protein, and DNA remains a nucleic acid.**
- DNA leaves the nucleus during the process and RNA remains in the nucleus.**

### Term

Which substances compose the backbone of DNA?

- sugars and lipids
- lipids and proteins
- sugars and phosphates
- phosphates and amino acids

### Term

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Which tool did Maurice Wilkins use when studying DNA?

- spectrometer
- digital camera
- X-ray machine
- electron microscope

### Term

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Which two scientists worked together to develop a three-dimensional model of DNA?

- Crick and Miescher
- Franklin and Watson
- Watson and Crick
- Miescher and Wilkins

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Which **best** describes how DNA fits inside a cell nucleus?

- DNA tightly coils around proteins and condenses into chromosomes, which fit in the nucleus.
- DNA is doubled-stranded, so one stand is inside the nucleus and the other wraps around the nucleus.
- DNA folds into stacked layers called chromatin, which then squeeze into the nucleus.
- DNA is naturally much smaller than the cell nucleus so it fits inside the nucleus.

### Term

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Which characteristics describe the genetic code of humans?

- can only help understand human genetics and is composed of 23 chromosomes.
- contains over 3 billion base pairs, can help explain genetic diseases, and composed of about 19,000 genes

### Term

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The arrow labeled X is pointing to

- DNA
- ribosome
- a protein
- RNA