Name: Score:

16 Multiple choice questions

Term 1 of 16

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.**

Term 2 of 16

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.**

Term 3 of 16

Which scientist discovered DNA after experimenting with white blood cells?

- **Watson**
- **Franklin**
- **Miescher**
- **Wilkins**

Term 4 of 16

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

chromosome
protein
gene
DNA

- **DNA**
- **chromosome**
- **protein**
- **gene**

Term 5 of 16

What is the twisted ladder shape of the DNA called?

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

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Term 6 of 16

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

Term 7 of 16

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

- nucleic acids
- carbohydrates
- proteins
- lipids

Term 8 of 16

What are the building blocks of proteins?

- tRNA molecules
- amino acids
- chromosomes
- ribosomes

Term 9 of 16

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.

Term 10 of 16

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.

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Term 11 of 16

Which substances compose the backbone of DNA?

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

Term 12 of 16

Which tool did Maurice Wilkins use when studying DNA?

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

Term 13 of 16

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**

Term 14 of 16

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 15 of 16

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 16 of 16

The arrow labeled X is pointing to _____.

- ○ **DNA**
- ○ **ribosome**
- ○ **a protein**
- ○ **RNA**

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