

Keystone Review 4

Grade: «grade»
Subject: «subject»
Date: «date»

Apr 11-10:00 AM

1

Cloning an individual usually produces organisms that

- (1) contain dangerous mutations
- (2) contain identical genes
- (3) are identical in appearance and behavior
- (4) produce enzymes different from the parent

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2

Which statement best describes the term *theory* as used in the gene-chromosome theory?

- (1) A theory is never revised as new scientific evidence is presented.
- (2) A theory is an assumption made by scientists and implies a lack of certainty.
- (3) A theory refers to a scientific explanation that is strongly supported by a variety of experimental data.
- (4) A theory is a hypothesis that has been supported by one experiment performed by two or more scientists.

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3

Which statements best describe the relationship between the terms *chromosomes*, *genes*, and *nuclei*?

- (1) Chromosomes are found on genes. Genes are found in nuclei.
- (2) Chromosomes are found in nuclei. Nuclei are found in genes.
- (3) Genes are found on chromosomes. Chromosomes are found in nuclei.
- (4) Genes are found in nuclei. Nuclei are found in chromosomes.

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4

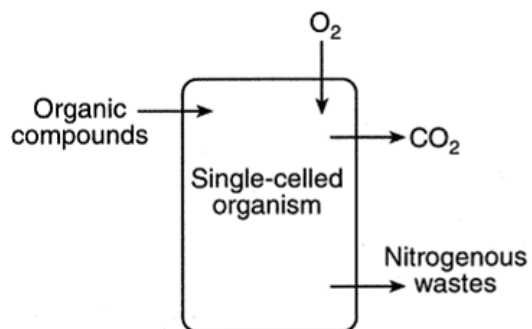
In a cell, information that controls the production of proteins must pass from the nucleus to the

- | | |
|-------------------|------------------|
| (1) cell membrane | (3) mitochondria |
| (2) chloroplasts | (4) ribosomes |

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5

The arrows in the diagram below indicate the movement of materials into and out of a single-celled organism.



The movements indicated by all the arrows are directly involved in

- (1) the maintenance of homeostasis
- (2) photosynthesis, only
- (3) excretion, only
- (4) the digestion of minerals

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6

The chart below shows relationships between genes, the environment, and coloration of tomato plants.

Inherited Gene	Environmental Condition	Final Appearance
A	Light	Green
B	Light	White
A	Dark	White
B	Dark	White

Which statement best explains the final appearance of these tomato plants?

- (1) The expression of gene *A* is not affected by light.
- (2) The expression of gene *B* varies with the presence of light.
- (3) The expression of gene *A* varies with the environment.
- (4) Gene *B* is expressed only in darkness.

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7

A sudden change in the DNA of a chromosome can usually be passed on to future generations if the change occurs in a

- (1) skin cell
- (2) liver cell
- (3) sex cell
- (4) brain cell

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8

A change in the order of DNA bases that code for a respiratory protein will most likely cause

- (1) the production of a starch that has a similar function
- (2) the digestion of the altered gene by enzymes
- (3) a change in the sequence of amino acids determined by the gene
- (4) the release of antibodies by certain cells to correct the error

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9

The diagrams below represent some steps in a procedure used in biotechnology.



Letters X and Y represent the

- (1) hormones that stimulate the replication of bacterial DNA
- (2) biochemical catalysts involved in the insertion of genes into other organisms
- (3) hormones that trigger rapid mutation of genetic information
- (4) gases needed to produce the energy required for gene manipulation

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10

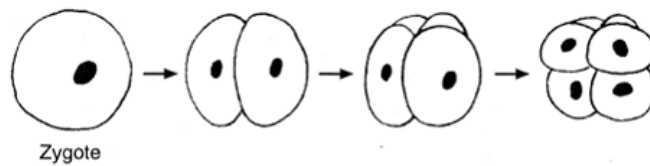
During meiosis, crossing-over (gene exchange between chromosomes) may occur. Crossing-over usually results in

- (1) overproduction of gametes
- (2) fertilization and development
- (3) the formation of identical offspring
- (4) variation within the species

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11

The diagram below represents some stages of early embryonic development.



Which process is represented by the arrows in the diagram?

- | | |
|-------------------|---------------|
| (1) meiosis | (3) mitosis |
| (2) fertilization | (4) evolution |

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12

The equation below represents a summary of a biological process.

carbon dioxide + water → glucose + water + oxygen

This process is completed in

- | | |
|------------------|--------------------|
| (1) mitochondria | (3) cell membranes |
| (2) ribosomes | (4) chloroplasts |

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