

Name: \_\_\_\_\_

Period: \_\_\_\_\_

### Genetics Intervention (before Q3)

Mitosis = \_\_\_\_\_ reproduction

Meiosis = \_\_\_\_\_ reproduction

Body cells grow via \_\_\_\_\_.

Sex cells are produced via \_\_\_\_\_.

DNA base pairing rule = \_\_\_\_\_ - \_\_\_\_\_ and \_\_\_\_\_ - \_\_\_\_\_

RNA base pairing rule = \_\_\_\_\_ - \_\_\_\_\_ and \_\_\_\_\_ - \_\_\_\_\_

Put the following in order from smallest to largest: *nucleus, cell, chromosome, gene*

Use the following words in a flowchart that describes the steps of protein synthesis.  
DNA, RNA, protein, amino acid, nucleus, ribosome, codon

You getting a tan in the summer and fish changing colors in warm water are examples of how \_\_\_\_\_ can affect gene expression.

Define genetic engineering

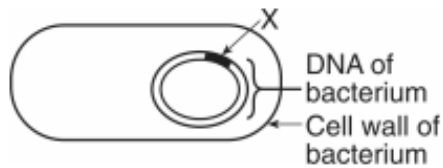
Give 2 examples/types

Gel electrophoresis separates DNA based on \_\_\_\_\_.

\_\_\_\_\_ are used to cut the DNA.

What are two other tools/ways to tell if two species are related? \*hint: state lab\*

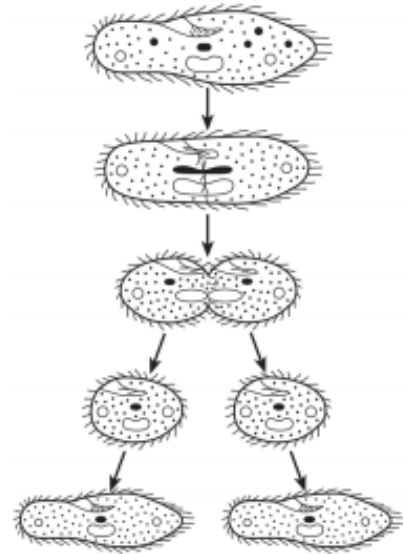
1. The diagram below shows some of the DNA in a bacterium into which a human gene, *X*, has been successfully inserted.



The bacteria that result from reproduction of this cell will most likely have the ability to

- A. replicate all of the genetic instructions found in humans
  - B. produce vaccines to be used to immunize humans
  - C. produce a human blood cell according to instructions in gene *X*
  - D. produce the human protein coded for by gene *X*
2. In the early 1900s, experiments were conducted on two caterpillar species. The members of the two species were each divided into two groups. One group of each species was placed under red light, while the other group of each species was kept in the dark. When the caterpillars developed into butterflies, their wings showed extreme color differences. Exposure to red light resulted in intensely colored wings, while those kept in the dark had paler wing colors. The color differences were most likely due to
- A. mutations in the color-producing genes
  - B. the caterpillars in the red light producing more DNA
  - C. gene expression being affected by the environment
  - D. the caterpillars in the dark evolving less than those in the light

3. A student used a microscope to observe a single-celled organism. As he watched, it looked as if the organism split into two cells. He made drawings, shown below, of the organism over a short period of time.



Which process did the student record in his drawings?

- A. genetic engineering
  - B. asexual reproduction
  - C. selective breeding
  - D. gamete formation
4. When receiving x rays, individuals wear a lead shield over major organs in order to limit the body's exposure to radiation. One reason for this procedure is to
- A. protect the patient against broken bones
  - B. prevent mutations in gametes
  - C. improve circulation in the patient
  - D. increase the chance of a change in DNA