

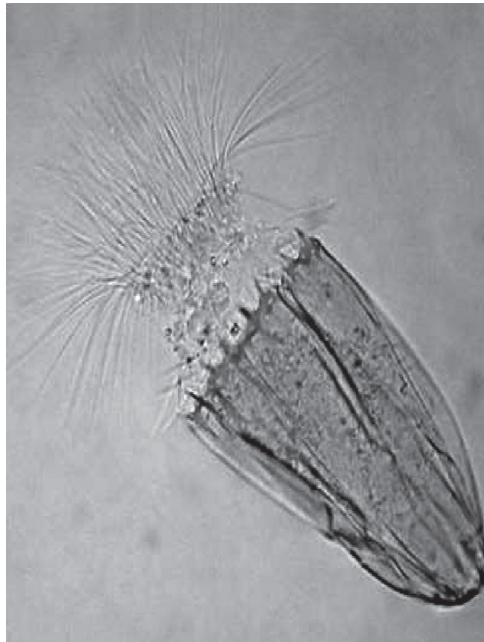
# Biology

**2011 Released Test Questions**

These released questions represent selected TEKS student expectations for each reporting category. These questions are samples only and do not represent all the student expectations eligible for assessment.

- 1 Loriciferans are microscopic multicellular animals that live in various marine sediments. Scientists have discovered genera of Loriciferans in a deep-sea habitat that lacks oxygen. Before this discovery, some prokaryotes and some unicellular eukaryotes were known to inhabit anaerobic environments. Among the newly discovered Loriciferans is *Spinoloricus* sp. nov., which is pictured below.

*Spinoloricus* sp. nov.

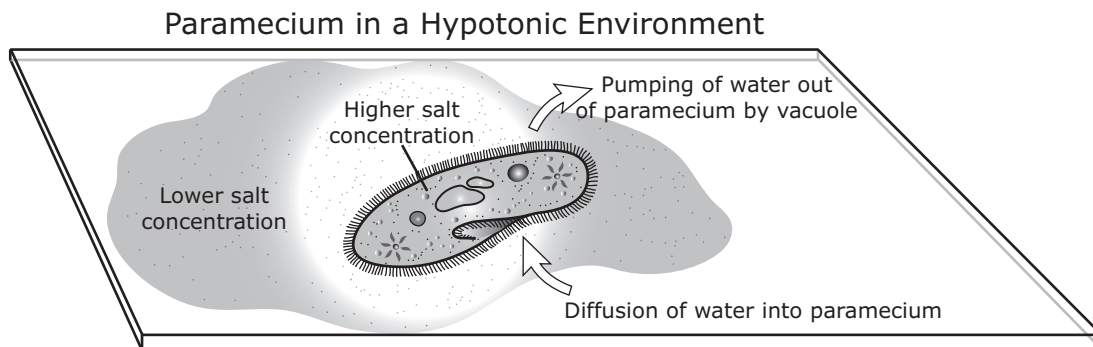


Source: Danovaro et al., 2010. BMC Biology.

Scientists determined that organisms of the genus *Spinoloricus* were eukaryotes and not prokaryotes because *Spinoloricus* cells have —

- A flagella
- B hereditary material
- C cell walls
- D nuclear membranes

- 2 The diagram below shows how a paramecium maintains homeostasis. A paramecium normally lives in a hypotonic environment in which water continually diffuses into the cell. To maintain homeostasis, the paramecium must pump out large amounts of water using its contractile vacuole.

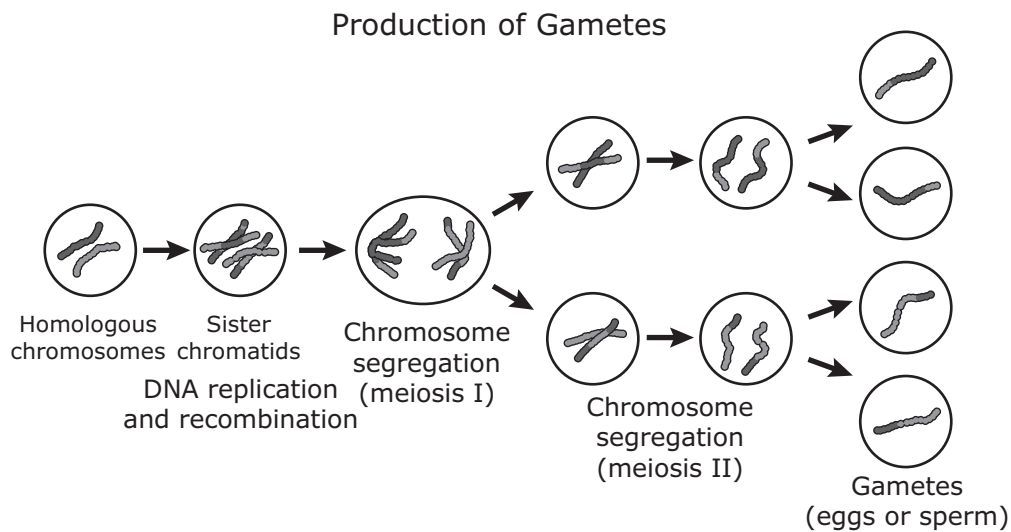


If the paramecium is then placed in a hypertonic environment, which of the following will occur?

- A Water will diffuse into the paramecium.
  - B Water will diffuse out of the paramecium.
  - C Salt will be pumped out of the paramecium by the vacuole.
  - D Salt will be pumped into the paramecium by the vacuole.
- 
- 3 Like complex carbohydrates, proteins are biomolecules that serve many functions and can be chemically broken down and restructured. Both proteins and complex carbohydrates are which of the following?
- A Polymers of smaller subunits
  - B Sequences of sugars
  - C Lipids of large molecules
  - D Nucleotides of DNA

- 4 A mutation is least likely to affect a cell when the mutation —
- A reverses the order of bases in a DNA strand
  - B allows the total number of bases in a DNA sequence to remain the same
  - C replaces a base with its complementary base
  - D produces a triplet that codes for the same amino acid as the original triplet

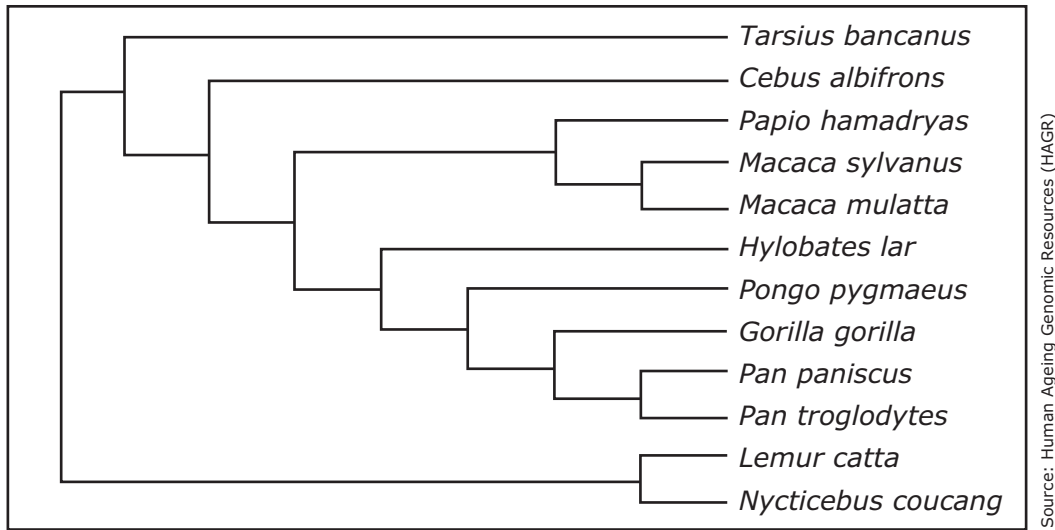
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The diagram above shows the process of meiosis. The segregation that occurs during meiosis results in a —

- A decrease in the total number of cells per organism
- B reduction in the number of chromosomes per cell
- C single fertilized egg cell
- D group of genetically identical cells

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The diagram above shows a model of species divergence among some primates. If this model is correct, the greatest genetic differences would be found in the DNA sequences of which two species?

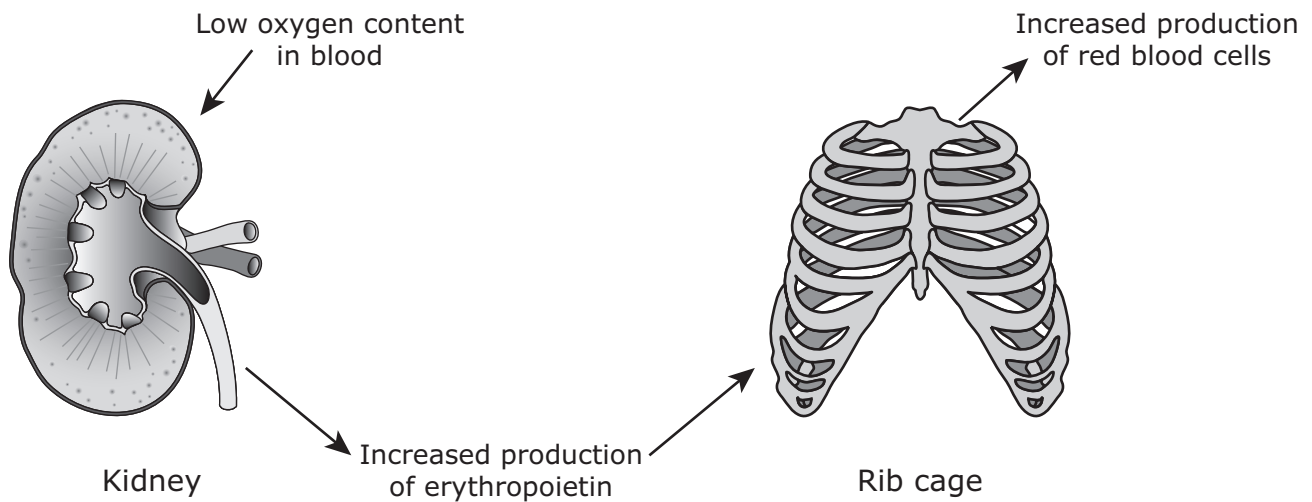
- A *Tarsius bancanus* and *Cebus albifrons*
- B *Macaca sylvanus* and *Macaca mulatta*
- C *Hylobates lar* and *Pongo pygmaeus*
- D *Pan troglodytes* and *Lemur catta*

7 Genetic variation can aid in the survival of species when the environment changes. Which of the following is the best example of an organism with a genetic variation that could improve survival chances over time?

- A An ant that is resistant to pesticide
- B A wasp that is infected with parasites
- C A cactus that has no spines
- D A mouse that has learned to avoid mousetraps

- 8** Methanogens, thermophiles, and halophiles are some of the most primitive life-forms found on Earth and thrive in very harsh environments. These unicellular, prokaryotic organisms most likely belong to which of the following kingdoms?
- A** Fungi
  - B** Eubacteria
  - C** Protista
  - D** Archaeobacteria
- 
- 9** In the process of deamination, the liver converts amino acids to compounds that can be used in energy metabolism. The liver removes the amino groups from amino acids to produce urea. Then the urea is removed from the body as urine. During this process, the liver works in conjunction with which body system?
- A** Endocrine
  - B** Excretory
  - C** Nervous
  - D** Respiratory

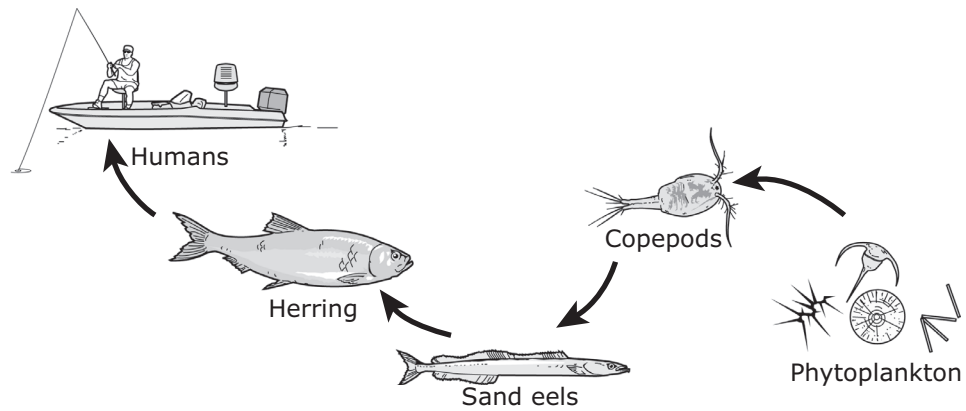
- 10** The diagram shows part of one of the many feedback loops required to maintain homeostasis in the human body.



This diagram suggests that which of the following could cause a low red-blood-cell count?

- A** The growth of new bone tissue
  - B** Chronic kidney disease
  - C** Decreased levels of metabolic waste
  - D** An increased breathing rate
- 
- 11** A lichen is composed of two organisms, a fungus and a cyanobacterium. The fungus provides a growing surface, moisture, and nutrients to the cyanobacterium. The cyanobacterium provides food to the fungus. This relationship is considered to be an example of which of the following?
- A** Commensalism
  - B** Mutualism
  - C** Neutralism
  - D** Parasitism

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An ocean food chain is shown in the diagram above. Which organism represents the trophic level containing approximately 1% of the initial amount of solar energy acquired by the phytoplankton?

- A** Copepods
- B** Sand eels
- C** Herring
- D** Humans



| Item Number | Reporting Category | Readiness or Supporting | Content Student Expectation | Process Student Expectation | Correct Answer |
|-------------|--------------------|-------------------------|-----------------------------|-----------------------------|----------------|
| 1           | 1                  | Supporting              | B.4(A)                      | B.3(B)                      | D              |
| 2           | 1                  | Readiness               | B.4(B)                      | B.2(G)                      | B              |
| 3           | 1                  | Readiness               | B.9(A)                      |                             | A              |
| 4           | 2                  | Readiness               | B.6(E)                      |                             | D              |
| 5           | 2                  | Supporting              | B.6(G)                      |                             | B              |
| 6           | 3                  | Readiness               | B.7(A)                      | B.3(B)                      | D              |
| 7           | 3                  | Supporting              | B.7(D)                      |                             | A              |
| 8           | 3                  | Supporting              | B.8(C)                      |                             | D              |
| 9           | 4                  | Readiness               | B.10(A)                     |                             | B              |
| 10          | 4                  | Supporting              | B.11(A)                     | B.2(G)                      | B              |
| 11          | 5                  | Readiness               | B.12(A)                     |                             | B              |
| 12          | 5                  | Readiness               | B.12(C)                     |                             | B              |

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