name

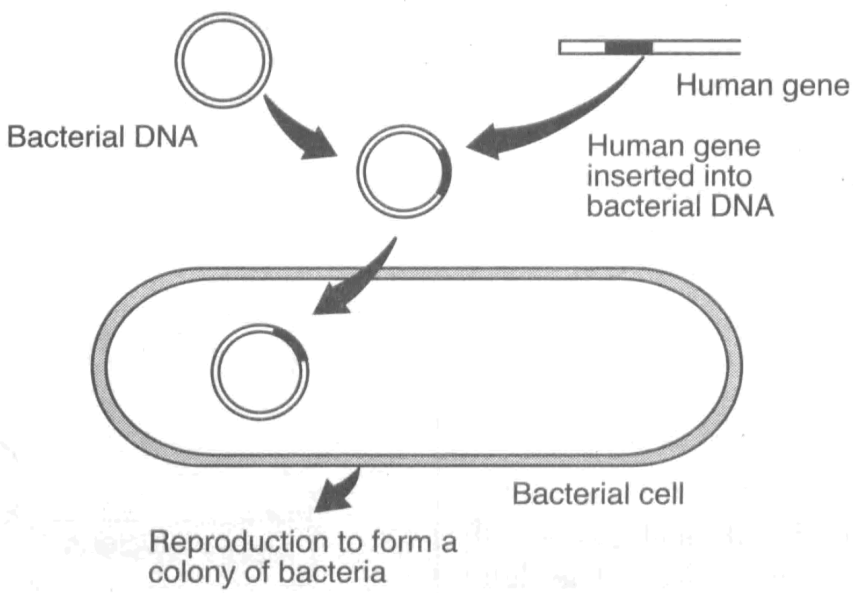
1. When humans first domesticated dogs, there was relatively little diversity in the species. Today, there are many variations such as the German shepherd and the dalmatian. This increase in diversity is most closely associated with

   A) cloning of selected body cells
   B) selective breeding
   C) mitotic cell division
   D) environmental influences on inherited traits

2. The DNA of a human cell can be cut and rearranged by using

   A) a scalpel
   B) electrophoresis
   C) hormones
   D) enzymes

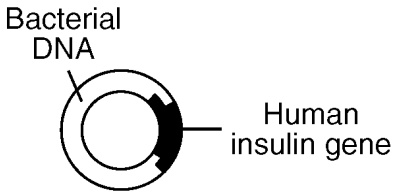
3. Base your answer to the following question on The diagram below represents a genetic procedure.



Which statement best describes the outcome of this procedure?

A) Bacterial cells will destroy defective human genetic material.
B) Bacterial cells may form a multicellular embryo.
C) The inserted human DNA will change harmful bacteria to harmless ones.
D) The inserted human DNA may direct the synthesis of human proteins.

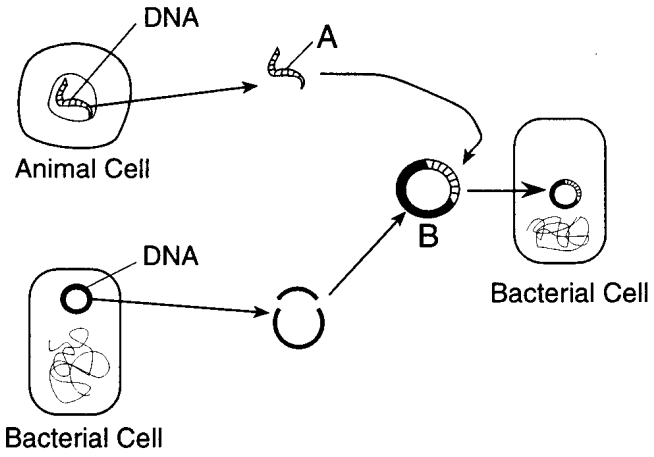
4. Base your answer to the following question on A product of genetic engineering technology is represented below.



Which substance was needed to join the insulin gene to the bacterial DNA as shown?

A) a specific carbohydrate
B) a specific enzyme
C) hormones
D) antibodies

5. Base your answer to the following question on the diagram below and on your knowledge of biology.



The technique illustrated in the diagram is known as

A) cloning
B) genetic engineering
C) protein synthesis
D) in vitro fertilization

6. Many diabetics are now using insulin that was made by certain bacteria. The ability of these bacteria to produce insulin can be attributed to which action?

A) deleting many DNA segments from bacterial DNA
B) genetic mapping of bacterial DNA to activate the gene for insulin production
C) inserting a portion of human DNA into the ring-shaped DNA of bacteria
D) using radiation to trigger mutations

7. In 1996, scientists cloned the first mammal, a sheep. This technique involved the removal of the nucleus from an egg cell. The nucleus from a cell of another adult sheep was then inserted into this egg cell. Once this cell began to develop into an embryo, it was implanted into a third female sheep that later gave birth to a healthy lamb, Dolly. Which statement concerning Dolly is correct?

A) Her offspring would be genetically identical.
B) Dolly and her DNA donor are genetically identical.
C) Two different gametes were manipulated to produce Dolly.
D) Dolly was produced by the recombination of genetic material.

8. What prevents scientists from cloning humans despite the fact that other mammals such as sheep have been cloned?

A) the technology to clone humans has not been explored
B) human reproduction is very different from that of other mammals
C) there are many ethical problems involved in cloning humans
D) cloning humans would take too long

9. Electrophoresis is a method of

A) separating DNA fragments
B) changing the genetic code of an organism
C) indicating the presence of starch
D) separating colored compounds on a strip of paper

10. Which statement is best supported by the theory of evolution?

A) Genetic alterations occur every time cell reproduction occurs.
B) The fossil record provides samples of every organism that ever lived.
C) Populations that have advantageous characteristics will increase in number.
D) Few organisms survive when the environment remains the same

11. Many scientists suggest that billions of years ago, life on Earth began with

A) simple, single-celled organisms
B) simple, multicellular organisms
C) complex, single-celled organisms
D) complex, multicellular organisms

12. Which statement is *most closely* related to the modern theory of evolution?

A) Characteristics that are acquired during life are passed to offspring by sexual reproduction.
B) Evolution is the result of mutations and recombination, only.
C) Organisms best adapted to a changed environment are more likely to reproduce and pass their genes to offspring.
D) Asexual reproduction increases the survival of species.

13. Which statement represents the major concept of the biological theory of evolution?

A) A new species moves into a habitat when another species becomes extinct.
B) Every period of time in Earth's history has its own group of organisms.
C) Present-day organisms on Earth developed from earlier, distinctly different organisms.
D) Every location on Earth's surface has its own unique group of organisms.

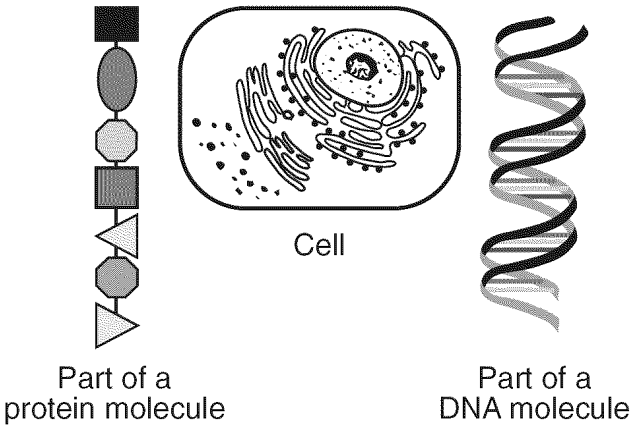
14. The term "evolution" is best described as

A) a process of change in a population through time
B) a process by which organisms become extinct
C) the reproductive isolation of members of certain species
D) the replacement of one community by another

15. In a cell, protein synthesis is the primary function of

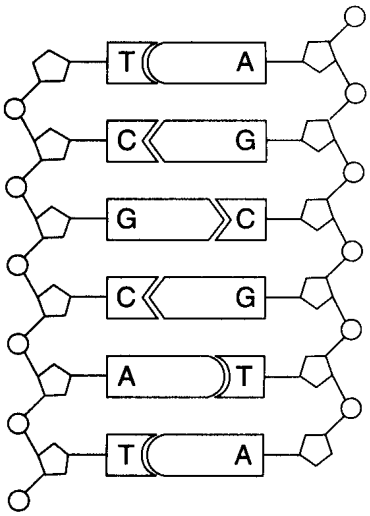
A) ribosomes B) mitochondria
C) chloroplasts D) vacuoles

16. Base your answer to the following question on Which statement best expresses the relationship between the three structures represented below?



A) DNA is produced from protein absorbed by the cell.
B) Protein is composed of DNA that is produced in the cell.
C) DNA controls the production of protein in the cell.
D) Cells make DNA by digesting protein.

17. Base your answer to the following question on The diagram below represents a portion of an organic molecule.



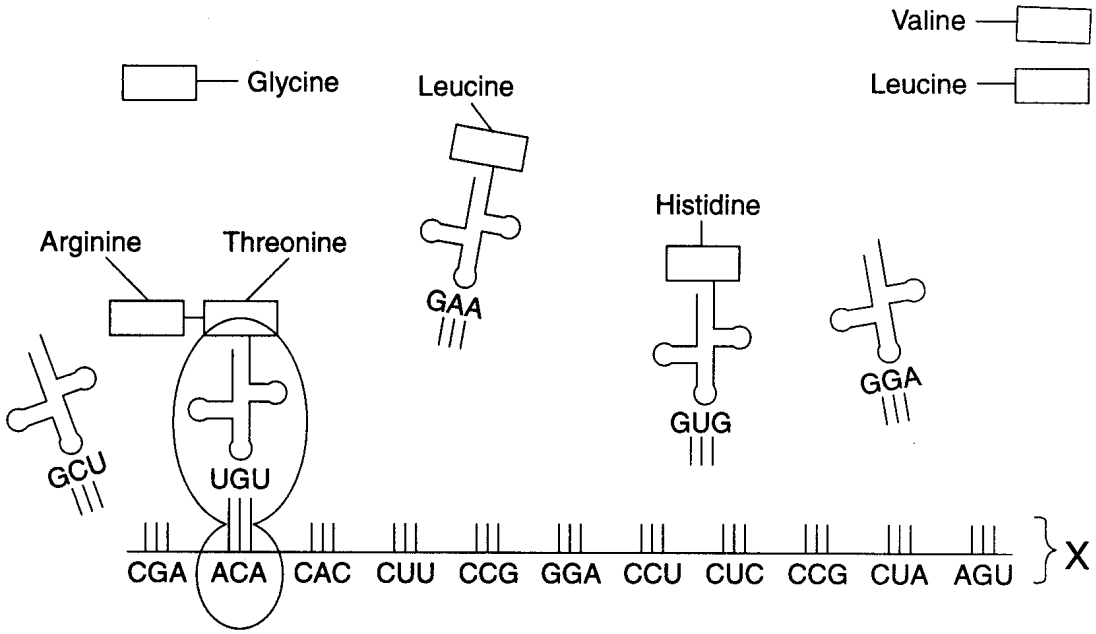
This molecule controls cellular activity by directing the synthesis of

A) carbohydrates B) minerals
C) fats D) proteins

18. Which base is normally used in the synthesis of RNA but *not* in the synthesis of DNA?

A) adenine B) uracil
C) cytosine D) guanine

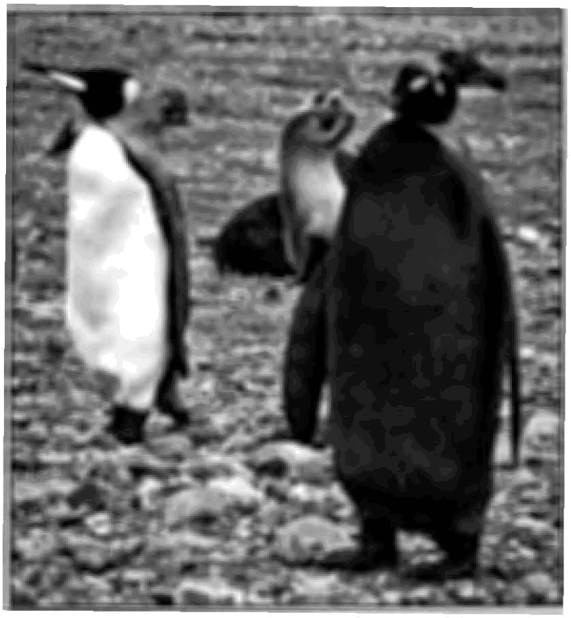
19. Base your answer to the following question on the diagram below of a biochemical process and on your knowledge of biology.



Which amino acid would be transferred to the position of codon CAC?

A) leucine B) glycine C) valine D) histidine

20. The photograph below shows two penguins of the same species displaying different feather color patterns.

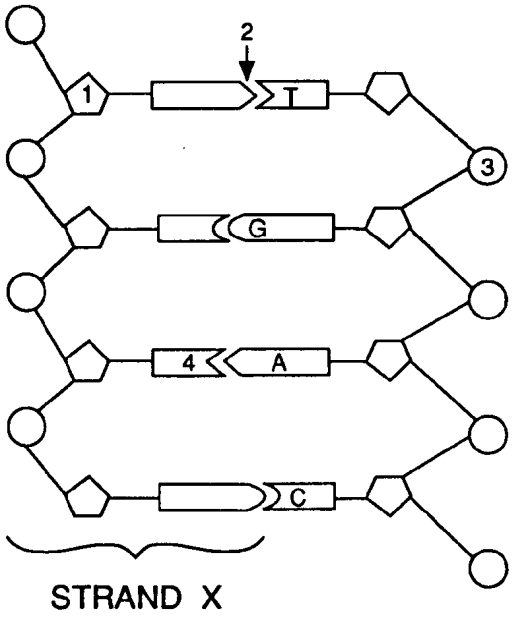


Source: http://green.yahoo.com/blog/guest_bloggers/24/all-black-penguin-discovered.html

The newly discovered all-black penguin had only black feathers since emerging from the egg. The sudden appearance of this characteristic was most likely due to

A) a change in environmental conditions
B) deposition of oil on the feathers due to pollution
C) a random change in the sequences of bases in DNA
D) a change in the diet of the penguin chick

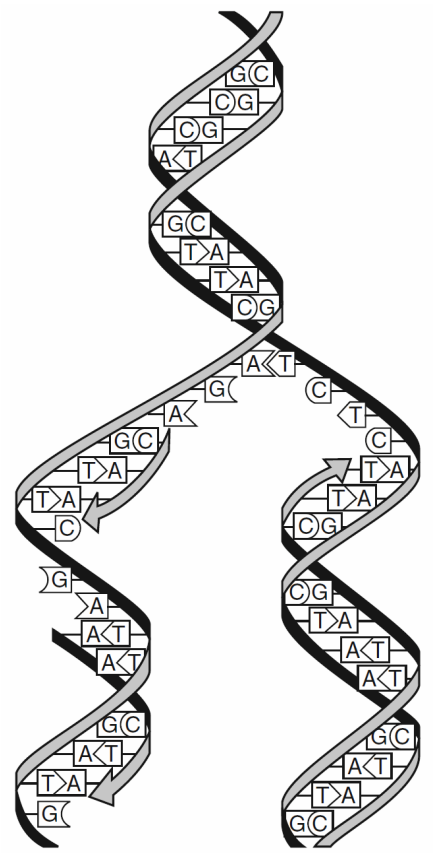
21. Base your answer to the following question on the diagram below of a DNA molecule and on your knowledge of biology.



A change in the sequence of T, G, A, and C would result in

A) nondisjunction
B) polyploidy
C) a sex-linked gene
D) a gene mutation

22. The process represented in the diagram below occurs in many cells.



The main function of this process is to

A) provide an exact copy of the genetic code
B) ensure genetic variation in a species
C) synthesize cellular proteins
D) produce antibodies to combat disease

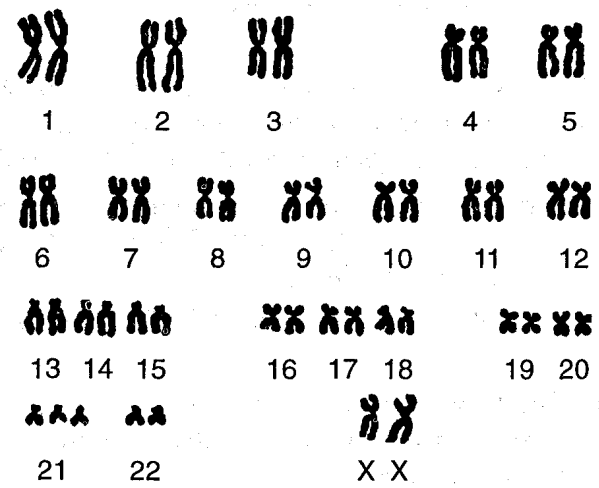
23. An alteration of genetic information is shown below.

A-G-T-A-C-C-G-A-T → A-G-T-G-A-T

This type of alteration of the genetic information is an example of

A) deletion
B) insertion
C) substitution
D) recombination

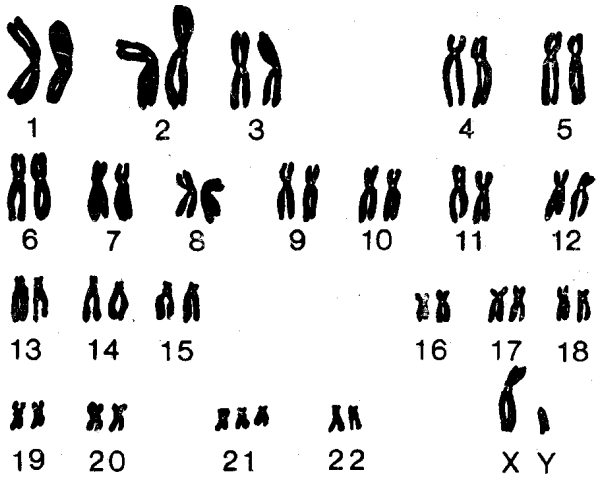
24. Base your answer to the following question on A karyotype is shown in the diagram below.



Information in this karyotype indicates that the individual is a

A) female with sickle-cell anemia
B) male with Tay-Sachs disease
C) female with Down syndrome
D) male with phenylketonuria

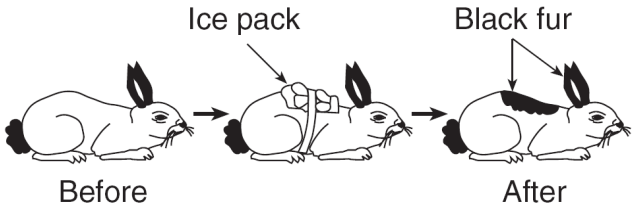
25. Base your answer to the following question on the diagram below of the chromosomes from a human cell and on your knowledge of biology.



The individual from whom these chromosomes were taken is a

A) male
B) female
C) hermaphrodite
D) polyploid

26. Base your answer to the following question on Which statement best explains the change shown in the diagram below?

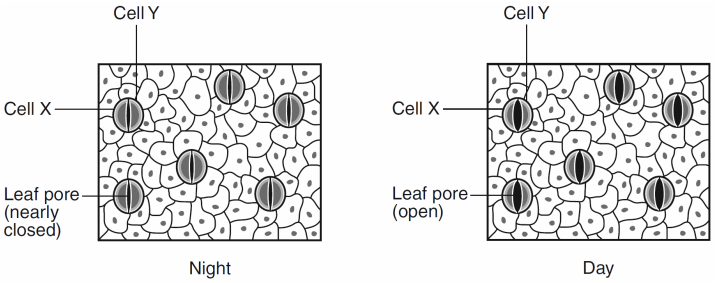


A) Gene expression in an organism can be modified by interactions with the environment.
B) Certain rabbits produce mutations that affect genes in specific areas of the body.
C) Sorting and recombination of genes can be influenced by very cold temperatures.
D) Molecular arrangement in existing proteins can be altered by environmental factors.

27. Although identical twins inherit exact copies of the same genes, the twins may look and act differently from each other because

A) a mutation took place in the gametes that produced the twins
B) the expression of genes may be modified by environmental factors
C) the expression of genes may be different in males and females
D) a mutation took place in the zygote that produced the twins

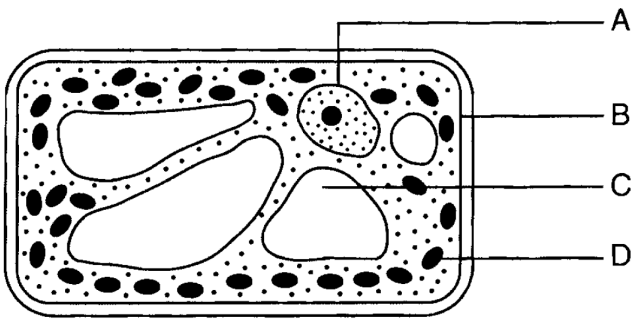
28. The diagram below represents changes in the sizes of openings present in leaves as a result of the actions of cells *X* and *Y*.



The actions of cells *X* and *Y* help the plant to

A) maintain homeostasis by controlling water loss
B) store excess heat during the day and remove the heat at night
C) absorb light energy necessary for cellular respiration
D) detect changes in the biotic factors present in the environmen

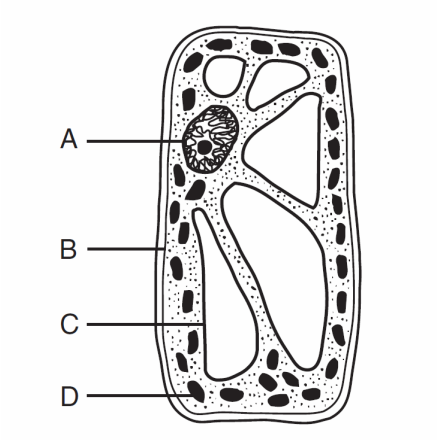
29. The cell represented below produces oxygen.



Which structure allows the passage of this oxygen to the environment?

A) *A* B) *B* C) *C* D) *D*

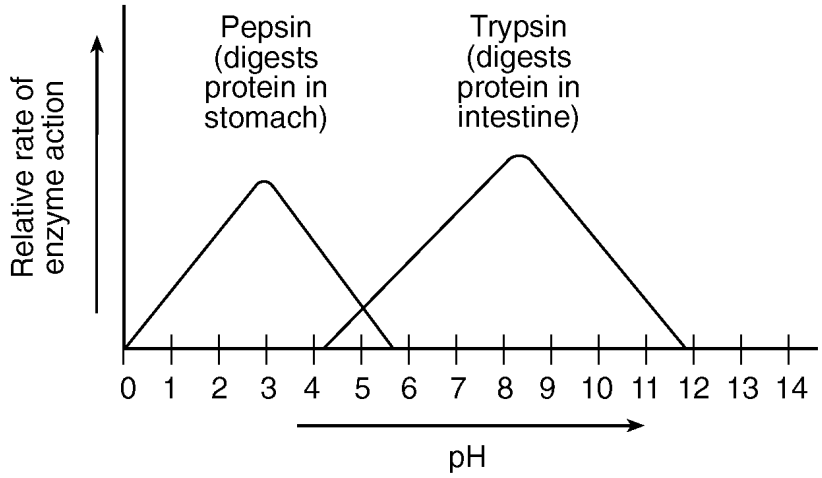
30. The diagram below represents a cell of a green plant.



Solar energy is used to produce energy-rich compounds in structure

A) A B) B C) C D) D

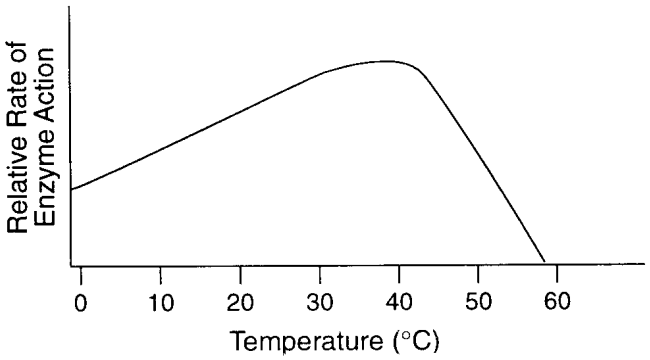
31. Base your answer to the following question on the graph below and your knowledge of biology.



Neither enzyme works at a pH of

A) 1 B) 5 C) 3 D) 13

32. The effect of temperature on the relative rate of action of an enzyme is represented in the graph below.



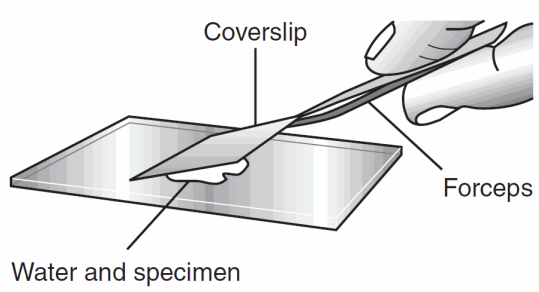
The optimum temperature for the action of this enzyme is approximately

A) 15ºC B) 22ºC C) 37ºC D) 50ºC

33. Which condition is necessary for enzymes and hormones to function properly in the human body?

A) These chemicals must have a specific shape.
B) These chemicals must be able to replicate.
C) Body temperature must be above 40°C.
D) Body pH must be above 10.

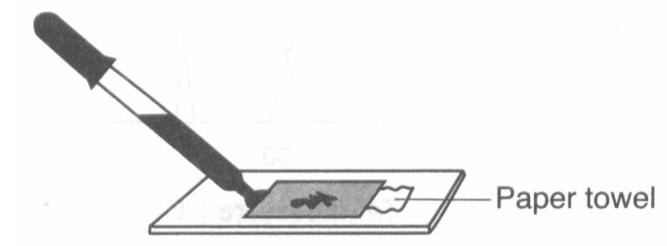
34. A laboratory technique is illustrated in the diagram below.



The technique of lowering the coverslip at an angle is used to

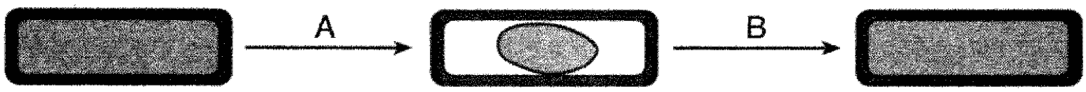
A) make organelles more visible
B) reduce the formation of air bubbles
C) make the specimen transparent
D) reduce the size of the specimen

35. Base your answer to the following question on Which laboratory procedure is represented in the diagram below?



A) placing a coverslip over a specimen
B) removing a coverslip from a slide
C) adding stain to a slide without removing the coverslip
D) reducing the size of air bubbles under a cover- slip

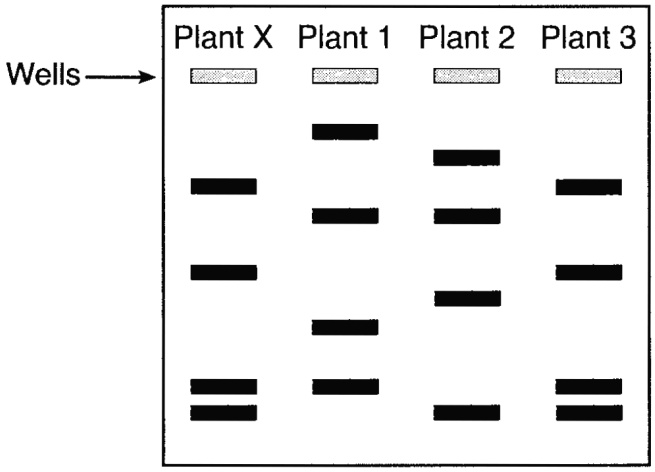
36. Base your answer to the following question on the diagram below and on your knowledge of biology. The diagram represents a cell and its changes as a result of two laboratory procedure. *A* and *B*.



Explain why procedure *B* has the opposite effect of procedure *A*.

37. Base your answer to the following question on the information below and on your knowledge of biology.

As part of a laboratory technique, DNA samples taken from four plants were separated. The results are represented in the diagram below.

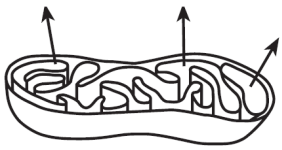


Which plant is most closely related to plant *X*? Support your answer using information from the diagram.

38. Photosynthesis transforms molecules of water and carbon dioxide into molecules of

A) carbohydrate and oxygen
B) carbohydrate and nitrogen
C) polypeptide and oxygen
D) polypeptide and nitrogen

39. Base your answer to the following question on The diagram below represents a structure involved in cellular respiration.

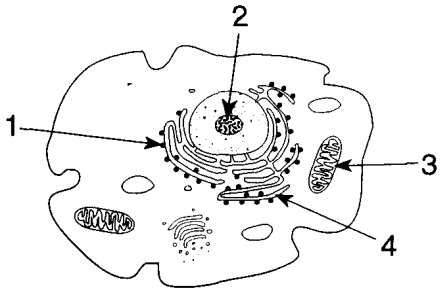


Mitochondrion

The release of which substance is represented by the arrows?

A) glucose B) oxygen
C) carbon dioxide D) DNA

40. In the diagram of a cell shown below, which number indicates the structure in which most of the enzymes involved in aerobic cellular respiration function?



A) 1 B) 2 C) 3 D) 4

Biology (Living Environment)

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