

The cells of which of the following organisms are prokaryotic?

- A) Mold
- B) Seaweed
- C) Blue-green bacteria
- D) Hydra

Which of the following represents a plausible progression in the evolution of plants?

- A) autotrophic eukaryotic cells → aerobic prokaryotic cells → photosynthetic cells → multicellular plants
- B) heterotrophic eukaryotic cells → anaerobic prokaryotic cells → autotrophic cyanobacteria → multicellular plants
- C) aerobic eukaryotic cells → anaerobic eukaryotic cells → photosynthetic cells → multicellular plants
- D) anaerobic prokaryotic cells → autotrophic cyanobacteria → aerobic eukaryotic cells → multicellular plants

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Which of the following is a monosaccharide?

- A) Glucose
- B) Cellulose
- C) Amylase
- D) Starch

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Which of the following is likely to happen when a limited amount of enzyme is added to a reaction with an unlimited amount of substrate?

- A) The rate of the reaction increases, then levels off as the entire enzyme is engaged.
- B) The rate of the reaction rises steeply, and then the reaction stops completely.
- C) The rate of the reaction rises steeply and continues to rise.
- D) The rate of the reaction slowly decreases.

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A cell without a nucleus or membrane-bound organelles is

- A) prokaryotic.
- B) replicating.
- C) in telophase.
- D) eukaryotic.

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Which of the following are found in the cells of fungi?

- I. Chloroplasts
- II. Nucleus
- III. Mitochondria
- IV. Ribosomes

- A) I, II and III
- B) I, II, III and IV
- C) I only
- D) II, III, and IV

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The ultimate source of energy for most life on Earth is

- A) water.
- B) protein.
- C) the Sun.
- D) ATP.

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The conversion of light energy into chemical energy is accomplished by

- A) catabolism.
- B) oxidative phosphorylation.
- C) metabolism.
- D) photosynthesis.

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Which of the following is not a step in the translation part of protein synthesis?

- A) Free bases line up along the DNA template and are bonded together forming a single strand of RNA.
- B) A ribosome attaches to start a codon on mRNA and links a tRNA with its attached amino acid.
- C) The ribosome continues to link a sequence of tRNA molecules that correspond with the mRNA strand being encoded.
- D) A terminating codon stops the synthesis process and releases the newly formed protein.

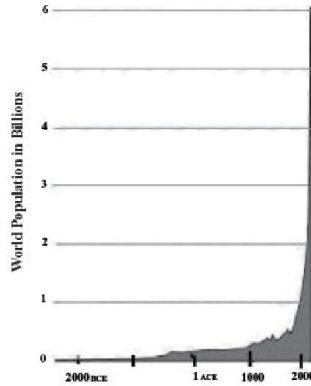
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Chromosomes that are paired with another of similar size and shape within the nucleus are known as

- A) homologs.
- B) histones.
- C) genes.
- D) nucleosomes.

6/30/2015 12:18 AM - Screen Clipping

The figure below shows the exponential rise in world population in recent years. Which of the following are immediate implications that could impact the world in the next generation or two?



- A) Pollution from added use of vehicles
- B) Pandemic disease from overcrowding of cities
- C) Localized famine
- D) Global climate change

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Each of the following statements about meiosis is true EXCEPT

- A) Meiosis produces two exact replica daughter cells.
- B) The first phase of meiosis is known as reduction, which reduces the ploidy from 2N to N (diploid to haploid).
- C) The second phase of meiosis, division, produces four haploid daughter cells, each with a different combination of chromosomes.
- D) Meiosis begins with chromosome duplication.

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When sodium (Na⁺) ion concentration outside a cell increases, water molecules travel out of the cell through the cell membrane. This process is known as

- A) osmosis.
- B) facilitated diffusion.
- C) exocytosis.
- D) endocytosis.

All of the following are true EXCEPT

- A) animal cells have organized nuclei and membrane-bound organelles.
- B) animal cells do not have cell walls or plastids.
- C) animals only reproduce asexually.
- D) animals develop from embryonic stages.

A form of symbiosis in which one species benefits while the other is harmed is called

- A) parasitism.
- B) mutualism.
- C) amensalism.
- D) habituation.

The enzyme amylase is present in saliva and is instrumental in the breakdown of starches in early digestion. Which of the following is the most likely reason for amylase's suitability to aid in the catalysis of starches?

- A) The shape of the active site on the amylase molecule matches the shape of starch molecules.
- B) The speed of the reaction is slowed by the ingestion of more starches.
- C) The amount of substrate is limited.
- D) All enzymes will aid in the catalysis of starches.

Which of the following are autotrophs?

- I. *E. coli* bacteria
- II. Portobello mushroom
- III. Asparagus fern
- IV. A human fetus

- A) I only
- B) III only
- C) II and IV
- D) II and III

Cells of eukaryotes have all of the following EXCEPT

- A) membrane-bound organelles.
- B) DNA organized into chromosomes.
- C) a nucleus.
- D) DNA floating free in the cytoplasm.

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The process whereby molecules and ions flow through a cell membrane from an area of higher concentration to an area of lower concentration without an input of energy is known as

- A) diffusion.
- B) active transport.
- C) endocytosis.
- D) exocytosis.

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A species' ecological niche is defined as including

- A) only the physical features of its habitat.
- B) all the biotic and abiotic factors that will support its life and reproduction.
- C) the biotic features of its habitat.
- D) only abiotic factors such as weather, temperature, etc.

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Members of which of the following categories are most closely related?

- A) Phylum
- B) Genus
- C) Kingdom
- D) Class

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Streptococcus pyogenes bacteria cause throat infections in humans, but can be killed with the antibiotic penicillin. If penicillin therapy is not administered correctly, some bacteria may survive. The surviving bacteria are those with a higher level of resistance to penicillin. The living resistant bacteria will reproduce, magnifying the traits of resistance in subsequent generations. This is an example of

- A) genetic drift.
- B) natural selection.
- C) mutation.
- D) genetic equilibrium.

A _____ is a distinct group of individuals that are able to mate and produce viable offspring.

- A) class
- B) community
- C) phylum
- D) species

There are three different genes that control skin color in humans. Each gene has a dominant and a recessive allele, so the possible alleles are A, a, B, b, C, c. The more dominant alleles inherited by offspring, the darker the skin color. Skin color in humans is an example of

- A) a polygenic trait.
- B) an autosome.
- C) a sex-linked trait.
- D) a monohybrid cross.

A single DNA strand that has the sequence GATACCA would be complemented by a strand of DNA with which sequence?

- A) GATACCA
- B) CTATGGT
- C) ACCATAG
- D) CUAUCCU

Which of the following is NOT an energy storage molecule?

- A) Cellulose
- B) Ribonucleic acid
- C) Starch
- D) Lipid

Learned behavior that results in not responding to a stimulus is called

- A) circadian rhythm.
- B) habituation.
- C) imprinting.
- D) altruism.

The physical place where a particular organism lives is called its

- A) niche.
- B) biosphere.
- C) lithosphere.
- D) habitat.

6/30/2015 12:30 AM - Screen Clipping

Sugars synthesized by photosynthesis travel through _____ to various parts of the plant.

- A) epidermal tissue
- B) vascular bundles
- C) meristem tissue
- D) parenchyma tissue

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Which of the following cell organelles is known as the cell's "powerhouse" because it produces energy for the cell's use?

- A) Nucleus
- B) Mitochondrion
- C) Smooth endoplasmic reticulum
- D) Ribosome

6/30/2015 12:31 AM - Screen Clipping

Which of the following is a polymer of amino acids?

- I. Lactose
- II. Lactase
- III. Glycogen
- IV. Sucrose

- A) I only
- B) II only
- C) I and II
- D) II, III and IV

6/30/2015 12:31 AM - Screen Clipping

Which of the following structures provide rigidity to plant cells but not animal cells?

- A) Microtubules
- B) Cell walls
- C) Microfilaments
- D) Centrioles

What are the chances that two normal parents, each carrying recessive genes for albinism, could have a heterozygous normal offspring?

- A) 1 out of 2
- B) 3 out of 4
- C) 2 out of 3
- D) 0 out of 4

7/1/2015 4:51 PM - Screen Clipping

The synthesis of ATP molecules to store energy is an example of

- A) anabolism.
- B) catabolism.
- C) adaptive radiation.
- D) lysis.

7/1/2015 4:53 PM - Screen Clipping

Hemophilia is a disease caused by a sex-linked recessive gene on the x chromosome; therefore,

- A) females have twice the likelihood of having the disease, since they have two x chromosomes.
- B) mothers can pass the gene with probability to either a son or daughter.
- C) females can never have the disease, but can only be carriers.
- D) inbreeding has no effect on the incidence of the disease, since it is purely sex-linked.

7/1/2015 4:54 PM - Screen Clipping

Because fungi can obtain nutrients from non-living organic matter, they are referred to as

- A) parasitic.
- B) saprophytic.
- C) eukaryotic.
- D) heterotrophic.

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Restriction enzymes are used in genetic research to

- A) cleave DNA molecules at certain sites.
- B) produce individual nucleotides from DNA.
- C) slow down the reproductive rate of bacteria.
- D) remove DNA strands from the nucleus.

7/1/2015 4:56 PM - Screen Clipping

After a forest fire, a meadow community develops and is later replaced by a temperate forest community. This process is called

- A) commensalism.
- B) succession.
- C) dynamic equilibrium.
- D) alternation of generations.

7/1/2015 4:56 PM - Screen Clipping

The molecule that stores energy short-term in muscle and liver tissue is

- A) glycogen.
- B) adipose.
- C) sucrose.
- D) fat.

7/1/2015 4:57 PM - Screen Clipping

Energy flows through the food chain from

- A) producers to consumers to decomposers.
- B) producers to secondary consumers to primary consumers.
- C) decomposers to consumers to producers.
- D) secondary consumers to producers.

7/1/2015 4:57 PM - Screen Clipping

Which group contains organisms with prokaryotic cells?

- A) Protista
- B) Archaea
- C) Fungi
- D) Plantae

7/1/2015 4:58 PM - Screen Clipping

All of the following are part of a DNA molecule EXCEPT

- A) nucleotide.
- B) sugar.
- C) phosphate group.
- D) an alcohol.

7/1/2015 4:58 PM - Screen Clipping

All of the following are lipids EXCEPT

- A) fat.
- B) steroid.
- C) triglyceride.
- D) cellulose.

7/1/2015 4:59 PM - Screen Clipping

A double-helix structure is characteristic of which molecule(s)?

- A) Water
- B) Deoxyribonucleic acid
- C) Carbohydrate
- D) Lipid

7/1/2015 4:59 PM - Screen Clipping

Mitochondria are likely to be most abundant in which type of tissue?

- A) Red blood cells
- B) Bone tissue
- C) Epithelial tissue
- D) Cardiac tissue

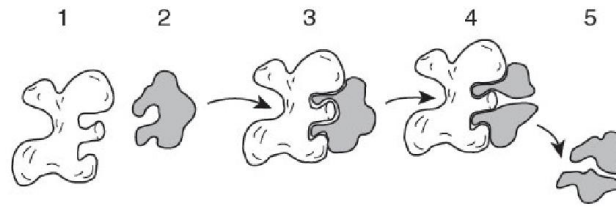
7/1/2015 5:00 PM - Screen Clipping

Photosynthesis would NOT proceed without which of these structures that allow moisture and gases to pass in and out of the leaf?

- A) Surface hairs
- B) Stomata
- C) Cuticles
- D) Epidermal cells

7/1/2015 5:00 PM - Screen Clipping

Use the figure below to answer Question 59.



In the picture above, step Number 3 represents

- A) a substrate.
- B) an enzyme.
- C) the products.
- D) the enzyme-substrate complex.

7/1/2015 5:00 PM - Screen Clipping

Which of the following is defined as a behavior that is learned only during a critical period of an organism's life?

- A) Instinct
- B) Habitat
- C) Imprinting
- D) Habituation

7/1/2015 5:01 PM - Screen Clipping

An automatic response to an environmental signal is a

- A) releaser.
- B) fixed action pattern.
- C) reflex.
- D) stimulus.

7/1/2015 5:02 PM - Screen Clipping

A population's carrying capacity is

- A) an abiotic limiting factor.
- B) the total area occupied by a particular species.
- C) a permanent one-way movement out of the original range.
- D) the maximum population level where a population will continue to thrive.

7/1/2015 5:02 PM - Screen Clipping

Cytokinesis is the stage of mitosis during which

- A) kinetochore forms.
- B) paired chromosomes separate at the kinetochore, and each chromosome travels along the spindle fibers to opposite ends of the cell.
- C) the nuclear membrane forms around new groups of single-stranded chromosomes.
- D) cytoplasm splits forming two distinct cells.

7/1/2015 5:02 PM - Screen Clipping

Chromosomes align along the equatorial plane of the cell during

- A) metaphase.
- B) anaphase.
- C) telophase.
- D) None of the above.

7/1/2015 5:03 PM - Screen Clipping

A mistake in the replication of DNA is known as a

- A) chromosome.
- B) mutation.
- C) genome.
- D) gene.

7/1/2015 5:04 PM - Screen Clipping

Which of the following is an infertile cell that results from meiosis II in females?

- A) Polar body
- B) Gamete
- C) Zygote
- D) Morula

7/1/2015 5:05 PM - Screen Clipping

The green color of plants is due to

- A) chloroplasts.
- B) verdine.
- C) protein.
- D) chlorophyll.

7/1/2015 5:05 PM - Screen Clipping

The cell that results from the combination of an egg cell of one individual with the sperm of another is called a

- A) gamete.
- B) zygote.
- C) morula.
- D) blastula.

7/1/2015 5:05 PM - Screen Clipping

Which of the following statements describes the concept of adaptive radiation?

- A) Short period of quick mutation and change resulting in new species
- B) Process whereby one species can evolve into several new species over time as migration to new areas occurs and traits are specialized to fit new habitat
- C) The development of members within a population that possess differences preventing successful reproduction with the original population
- D) The tendency for an individual to express altruistic traits toward close relatives, thus preserving the genes that produce altruistic traits

7/1/2015 5:06 PM - Screen Clipping

Of the following, which are characteristics of gymnosperms?

- I. Seed producing
- II. Flower producing
- III. Cone-bearing

- A) I, II, and III
- B) I and II only
- C) II and III only
- D) I and III only

7/1/2015 5:07 PM - Screen Clipping

All of the following are part of the transcription step in protein synthesis EXCEPT that

- A) DNA molecule "unzips," exposing a sequence of nucleotides that corresponds to a certain amino acid or protein.
- B) RNA polymerase matches RNA nucleotides to their corresponding DNA nucleotides.
- C) mRNA strand is formed as RNA nucleotides join together and uncoil from DNA.
- D) Ribosome attaches to start codon on mRNA.

7/1/2015 5:07 PM - Screen Clipping

The modern synthesis concept of evolution stresses that

- A) evolution represents gradual change in traits across populations
- B) evolution is only seen on the species level
- C) evolution may occur in bursts over a short period of time
- D) evolution represents the presence of acquired characteristics in individuals

Populations in which no environmental or social limits are present that affect population size would result in which of the following?

- A) Logistic population growth
- B) S-curve population growth
- C) J-curve population growth
- D) None of the above.

Darwin's theory of natural selection includes all of the following stipulations EXCEPT

- A) every organism produces more organisms that can survive.
- B) due to competition, not all organisms survive.
- C) some organisms are more fit, i.e., they are able to survive better in the environment.
- D) variation is due, at least in part, to mutations.

The filtering of inhaled debris that travels through the upper respiratory tract occurs through the action of

- A) cilia.
- B) goblet cells.
- C) Leidy cells.
- D) phagocytes.

Which of the following diseases is caused by a protozoa?

- A) Chicken pox
- B) Common cold
- C) Malaria
- D) Measles