

Cell Biology Interview Questions And Answers Guide.



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Cell Biology Job Interview Preparation Guide.

Question # 1

What is the difference between plasma membrane and cell wall?

Answer:-

Plasma membrane and cell wall is not the same thing. Plasma membrane, also called cell membrane, is the outer membrane common to all living cells and it is made of a phospholipid bilayer, embedded proteins and some appended carbohydrates.

Because cell membranes are fragile, in some types of cells there are even outer structures that support and protect the membrane, like the cellulose wall of plant cells and the chitin wall of some fungi cells. Most bacteria also present an outer cell wall made of peptidoglycans and other organic substances.

Cell Structure Review - Image Diversity: cell wall

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Question # 2

What are the chemical substances that compose the plasma membrane?

Answer:-

The main constituents of the plasma membrane are phospholipids, proteins and carbohydrates. The phospholipids, amphipathic molecules, are regularly organized in the membrane according to their polarity: two layers of phospholipids form the lipid bilayer with the polar part of the phospholipids pointing to the exterior of the layer and the non polar phospholipid chains in the interior. Proteins can be found embedded in the lipid bilayer and there are also some carbohydrates bound to proteins and to phospholipids in the outer face of the membrane.

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Question # 3

Do bacteria cells have nucleus?

Answer:-

In bacteria the genetic material is dispersed in the cytosol and there is no internal membrane that delimits a nucleus.

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Question # 4

Is there any bacteria made of more than one cell?

Answer:-

There are no pluricellular bacteria. All bacteria are unicellular prokaryotic.

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Question # 5

What is the plasma membrane of the cell? What are its main functions?

Answer:-

The plasma membrane is the outer membrane of the cell it delimits the cell itself and a cell interior with specific conditions for the cellular function. Since it is selectively permeable the plasma membrane has an important role for the passage of substances inwards or outwards.

Cell Structure Review - Image Diversity: cell membrane

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Question # 6

What are the two big groups into which cells are classified?

Answer:-

Cells can be classified as eukaryotic or prokaryotic.

Prokaryotic cell is that without a delimited nucleus. Eukaryotic cells are those with nucleus delimited by membrane.

Cell Structure Review - Image Diversity: eukaryotic cell prokaryotic cell

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Question # 7

In 1665 Robert Hooke, an English scientist, published his book *Micrographia*, in which he described that pieces of cork viewed under the microscope present small cavities similar to pores and filled with air. Based on later knowledge of what were the walls of those cavities constituted? What is the historical importance of that observation?

Answer:-

The walls of the cavities observed by Hooke were the walls of the plant cells that form the tissue. The observation led to the discovery of the cells, a fact only possible after the invention of the microscope. In that work, Hooke established the term "cell", now widely used in Biology, to designate those cavities seen under the microscope.

Cell Structure Review - Image Diversity: Hooke's cell

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Question # 8

Are there living beings without cell?

Answer:-

The virus is considered the only alive beings that do not have cells. Virus are constituted by genetic material (DNA or RNA) wrapped by a protein capsule. They do not have membrane and cell organelles neither self-metabolism.

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Question # 9

What is the cell theory?

Answer:-

Cell theory is a theory that asserts that the cell is the constituent unit of the living beings.

Before the discovery of the cell, it was not recognized that the living beings were made of building blocks like cells.

The cell theory is one of the basic theories of Biology.

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Question # 10

What are the main respective constituents of cell walls in bacteria, protists, fungi and plants?

Answer:-

In bacteria cell wall is made of peptidoglycans; among protists algae have cell wall made of cellulose; in fungi, the cell wall is made of chitin (the same substance that makes the exoskeleton of arthropods); in plants, the cell wall is made of cellulose too.

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Question # 11

Do membranes form only the outer wrapping of cells?

Answer:-

Lipid membranes do not form only the outer cover of cells. Cell organelles, such as the Golgi complex, mitochondria, chloroplasts, lysosomes, the endoplasmic reticula and the nucleus, are delimited by membranes too.

Cell Structure Review - Image Diversity: cell nucleus

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Question # 12

Which type of cell came first in evolution the eukaryotic cell or the prokaryotic cell?

Answer:-

This is an interesting problem of biological evolution. The most accepted hypothesis asserts that the more simple cell, the prokaryotic cell, appeared early in evolution than the more complex eukaryotic cell. The endosymbiotic hypothesis, for example, affirms that aerobic eukaryotic cells appeared from the mutualist ecological interaction between aerobic prokaryotes and primitive anaerobic eukaryotes.

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Question # 13

Concerning the presence of nucleus what is the difference between animal and bacterial cells?

Answer:-

Animal cells (cells of living beings of the kingdom Animalia) have an interior membrane that delimits a cell nucleus and thus they are eukaryotic cells; in these cells the genetic material is located within the nucleus. Bacterial cells (cells of living beings of the kingdom Monera) do not have organized cellular nucleus and so they are prokaryotic cells and their genetic material is found dispersed in the cytosol.

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Question # 14

What are the three main parts of a eukaryotic cell?

Answer:-

The eukaryotic cell can be divided into two main portions: the cell membrane that separates the intracellular space from the outer space physically delimiting the cell; the cytoplasm, the interior portion filled with cytosol (the aqueous fluid inside the cell); and the nucleus, the membrane-delimited internal region that contains the genetic material.

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Question # 15

What are the main structures within the cell nucleus?

Answer:-

Within the cell nucleus the main structures are: the nucleolus, an optically dense region, spherical shaped, where there are concentrated ribosomal RNA (rRNA) associated to proteins (there may be more than one nucleolus in a nucleus); the chromatin, made of DNA molecules dispersed in the nuclear matrix during the cell interphase; the karyotecha, or nuclear membrane, the membrane that delimits the nucleus.

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Question # 16

What are the substances that constitute the chromatin? What is the difference between chromatin and chromosome?

Answer:-

The chromatin, dispersed in the nucleus, is a set of filamentous DNA molecules associated to nuclear proteins called histones. Each DNA filament is a double helix of DNA and thus a chromosome.

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Question # 17

How is the fluid that fills the nucleus called?

Answer:-

The aqueous fluid that fills the nuclear region is called karyolymph, or nucleoplasm. In the fluid there are proteins, enzymes and other important substances for the nuclear metabolism.

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Question # 18

Of what substances is the nucleolus made? Is there a membrane around the nucleolus?

Answer:-

Nucleolus is a region within the nucleus made of ribosomal RNA (rRNA) and proteins. It is not delimited by membrane.

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Question # 19

What is the name of the membrane that delimits the nucleus? To which component of the cell structure that membrane is contiguous?

Answer:-

The nuclear membrane is also called karyotecha. The nuclear membrane is continuous to the endoplasmic reticulum membrane.

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Question # 20

What are the main cytoplasmic structures present in animal cells?

Answer:-

The main cytoplasmic structures of the cell are the centrioles, the cytoskeleton, lysosomes, mitochondria, peroxisomes, the Golgi apparatus, the endoplasmic reticula and ribosomes.

Cell Structure Review - Image Diversity: cell organelles

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Question # 21

What are cytoplasmic inclusions?

Answer:-

Cytoplasmic inclusions are cytoplasmic molecular aggregates, such as pigments, organic polymers and crystals. They are not considered cell organelles.

Fat drops and glycogen granules are examples of cytoplasmic inclusions.

Cell Structure Review - Image Diversity: cytoplasmic inclusions

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Question # 22

Where in the cell can ribosomes be found? What is the main biological function of ribosomes?

Answer:-

Ribosomes can be found free in the cytoplasm, adhered to the outer side of the nuclear membrane or associated to the endoplasmic reticulum membrane defining the rough endoplasmic reticulum. Ribosomes are the structures where protein synthesis takes place.

Cell Structure Review - Image Diversity: ribosomes

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Question # 23

What is the difference between smooth and rough endoplasmic reticulum?

Answer:-

The endoplasmic reticulum is a delicate membranous structure contiguous to the nuclear membrane and present in the cytoplasm. It forms an extense net of channels throughout the cell and it is divided in rough and smooth types.



The rough endoplasmic reticulum has great amount of ribosomes adhered to the external side of its membrane. The smooth endoplasmic reticulum does not have ribosomes attached to its membrane.

The main functions of the rough endoplasmic reticulum are synthesis and storage of proteins made in the ribosomes. The smooth endoplasmic reticulum plays a role in the lipid synthesis and, in muscle cells it is important in the conduction of the contraction stimulus.

Cell Structure Review - Image Diversity: endoplasmic reticulum

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Question # 24

A netlike membranous complex of superposed flat saccules with vesicles detaching from the extremities seen in electronic microscopy. What is the observed structure? What is its biological function?

Answer:-

What is being observed is the Golgi complex, or Golgi apparatus. This cytoplasmic organelle is associated with chemical processing and modification of proteins made by the cell and with storage and branding of these proteins for posterior use or secretion. Vesicles seen in the electronic microscope contain material already processed, ready to be exported (secreted) by the cell. The vesicles detach from the Golgi apparatus, travel across the cytoplasm and fuse with the plasma membrane then secreting their substances to the exterior.

Cell Structure Review - Image Diversity: Golgi apparatus

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Question # 25

On which organelle of the cell structure does intracellular digestion depends? What is the chemical content of those organelles?

Answer:-

Intracellular digestion occurs by the action of lysosomes. Lysosomes have digestive enzymes (hydrolases) that are made in the rough endoplasmic reticulum and stored in the Golgi apparatus. Lysosomes are hydrolase-containing vesicles that detach from the Golgi apparatus.

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Question # 26

Why lysosomes are know as the cleaners of the cell waste?

Answer:-

Lysosomes make autophagic and heterophagic digestion: autophagic digestion by digesting residual substances from the cellular metabolism; heterophagic digestion by digesting substances that enter the cell. Lysosomes engulf the substances to be degraded forming digestive vacuoles, or residual vacuoles, that later migrate toward the plasma membrane fusing with it and liberating (exocytosis) the digested material to the exterior.

Cell Structure Review - Image Diversity: lysosomes

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Question # 27

Which are the cell organelles that participate in the cell division and in the formation of cilia and flagella of some eukaryotic cells?

Answer:-

The organelles that participate in the cell division and in the formation of cilia and flagella of some eukaryotic cells are the centrioles. Some cells have cilia (paramecium, the bronchial ciliated epithelium, etc.) or flagella (flagellate protists, sperm cells, etc.); these cell structures are composed by microtubules originated from the centrioles. Centrioles also make the aster microtubules that are very important for cell division.

Cell Structure Review - Image Diversity: centrioles

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Question # 28

What are the morphological, chemical and functional similarities and differences between lysosomes and peroxisomes?

Answer:-

Similarities: lysosomes and peroxisomes are small membranous vesicles that contain enzymes and enclose residual substances from internal or external origin degrading them. Differences: lysosomes have digestive enzymes (hydrolases) that break substances to be digested into small molecules; peroxisomes contain enzymes that degrade mainly long-chained fatty acids and amino acids and that inactivate toxic agents including ethanol; within peroxisomes there is the enzyme catalase, responsible for the oxidation of organic compounds by hydrogen peroxide (H₂O₂) and, when this substance is in excess, by the degradation of the peroxide into water and molecular oxygen.

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Question # 29

What are mitochondria? What is the basic morphology of these organelles and in which cells can they be found?

Answer:-

Mitochondria are the organelles in which the most important part of the cellular respiration occurs: the ATP production.

Mitochondria are organelles delimited by two lipid membranes. The inner membrane invaginates to the interior of the organelle forming cristae that delimitate the internal space known as mitochondrial matrix and where mitochondrial DNA (mtDNA), mitochondrial RNA (mt RNA), mitochondrial ribosomes and respiratory enzymes can be found. Mitochondria are numerous in eukaryotic cells and they are even more abundant in those cells that use more energy, like muscle cells. Because they have their own DNA, RNA and ribosomes, mitochondria can self-replicate.

Cell Structure Review - Image Diversity: mitochondria

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Question # 30

Why can mitochondria be considered the power plants of the aerobic cells?

Answer:-



Mitochondria are the "power plants" of aerobic cells because within them the final stages of the cellular respiration process occurs. Cellular respiration is the process of using organic molecule (mainly glucose) and oxygen to produce carbon dioxide and energy. The energy is stored in the form of ATP (adenosine triphosphate) molecules and later used in other cellular metabolic reactions. In mitochondria the two last steps of the cellular respiration take place: the Krebs cycle and the respiratory chain.

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Question # 31

What is the endosymbiotic hypothesis about the origin of mitochondria? What are the molecular facts that support the hypothesis? To which other cellular organelles the hypothesis can also be applied?

Answer:-

It is presumed that mitochondria were primitive aerobic prokaryotes that were engulfed in mutualism by primitive anaerobic eukaryotes, receiving protection from these beings and offering energy to them. This hypothesis is called the endosymbiotic hypothesis on the origin of mitochondria.

The hypothesis is strengthened by some molecular evidences as the facts that mitochondria have own and independent DNA and protein synthesis machinery, with own RNA and ribosomes, and that they can self-replicate.

The endosymbiotic theory can be applied for chloroplasts too. It is supposed that these organelles were primitive photosynthetic prokaryotes because they have own DNA, RNA and ribosomes and they can self-replicate too.

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Question # 32

What are the main components of the cytoskeleton?

Answer:-

The cytoskeleton is a network of very small tubules and filaments distributed throughout the cytoplasm of eukaryotic cells. It is made of microtubules, microfilaments and intermediate filaments.

Microtubules are formed by molecules of a protein called tubulin. Microfilaments are made of actin, the same protein that participates in the contraction of muscle cells. Intermediate filaments are made of protein too.

Cell Structure Review - Image Diversity: cytoskeleton

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Question # 33

What are the functions of the cytoskeleton?

Answer:-

As the name indicates, the cytoskeleton is responsible for the supporting of the normal shape of the cell; it also acts as a facilitator for substance transport across the cell and for the movement of cellular organelles. For example, the sliding between actin-containing filaments and the protein myosin creates pseudopods. In cells of the phagocytic defense system, like macrophages, cytoskeleton is responsible for the plasma membrane projections that engulf the external material to be interiorized and attacked by the cell.

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Question # 34

What are chloroplasts? What is the main function of chloroplasts?

Answer:-

Chloroplasts are organelles present in the cytoplasm of plant and algae cells. Likewise mitochondria, chloroplasts have two boundary membranes and many internal membranous sacs. Within the organelle there are own DNA, RNA and ribosomes and also the pigment chlorophyll, responsible for absorption of photic energy that is used in photosynthesis.

The main function of chloroplasts is photosynthesis: the production of highly energetic organic molecules (glucose) from carbon dioxide, water and light.

Cell Structure Review - Image Diversity: chloroplasts

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Question # 35

What is the molecule responsible for the absorption of photic energy for photosynthesis? Where is that molecule located in photosynthetic cells?

Answer:-

The chlorophyll molecules are the responsible for the absorption of the light energy for photosynthesis. These molecules are found on the internal membranes of chloroplasts.

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Question # 36

What are the colors (of the electromagnetic spectrum) absorbed by plants? What would happen to photosynthesis if the green light waves that reach a vegetable were blocked?

Answer:-

Chlorophyll absorbs all other colors of the electromagnetic spectrum but it practically does not absorb the green. The green color is reflected and such reflection provides the characteristic color of plants. If the green light that reaches a plant is blocked and the exposition of the plant to other colours is maintained there would be no harm for photosynthesis. Apparent paradox: the green light is not important for photosynthesis.

There is difference between the optimum color frequency for the two main types of chlorophyll, the chlorophyll A and the chlorophyll B. Chlorophyll A has an absorption peak in approximately 420 nm wavelength (violet) and chlorophyll B has its major absorption in 450 nm wavelength (blue).

Cell Structure Review - Image Diversity: electromagnetic spectrum

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Question # 37



What is the way followed by the energy absorbed by plants to be used in photosynthesis?

Answer:-

The energy source of photosynthesis is the sun, the unique and central star of our planetary system. In photosynthesis the solar energy is transformed into chemical energy, the energy of the chemical bonds of the produced glucose molecules (and of the released molecular oxygen). The energy of glucose then is stored as starch (a glucose polymer) or it is used in the cellular respiration process and transferred to ATP molecules. ATP is consumed in metabolic processes that spend energy (for example, in active transport across membranes).

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Question # 38

Of what substance the plant cell wall is made? Is that substance a polymer made of which monomer?

Answer:-

The plant cell wall is made of cellulose. Cellulose is a polymer whose monomer is glucose. There are other polymers of glucose, like glycogen and starch. Cell Structure Review - Image Diversity: plant cell wall

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Question # 39

What is the function of the plant cell wall?

Answer:-

The plant cell wall has structural and protective functions. It plays important role in the constraint of the cell size, preventing the cell to break when it absorbs much water.

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Question # 40

What are plant cell vacuoles? What are their functions? How is the covering membrane of the vacuoles called?

Answer:-

Plant cell vacuoles are cell structures delimited by membranes within which there is an aqueous solution made of several substances like carbohydrates and proteins. In young plant cells many small vacuoles can be seen; within adult cells the most part of the internal area of the cell is occupied by a central vacuole. The main function of the vacuoles is the osmotic balance of the intracellular space. They act as "ocean external space" inside the cell. Vacuoles absorb or release water in response to the cellular metabolic necessities by increasing or lowering the concentration of osmotic particles dissolved in the cytosol. Vacuoles also serve as storage place for some substances. The membrane that delimits the vacuoles is called tonoplast, named after the osmotic function of the structure.

[Read More Answers.](#)

Question # 41

What is a membrane?

Answer:-

Membrane is any delicate sheet that separates one region from other blocking or permitting (selectively or completely) the passage of substances. The skin, for example, can be considered a membrane that separates the exterior from the interior of the body; cellophane, used in chemical laboratories to separate solutions, acts as membrane too.

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Question # 42

Concerning their permeability how are membranes classified?

Answer:-

Membranes can be classified as impermeable, permeable, semipermeable or selectively permeable. An impermeable membrane is that through which no substance can pass. Semipermeable membranes are those that let only solvent, like water, to pass through it. Permeable membranes are those that let solvent and solutes, like ions and molecules, to pass across it. There are still selectively permeable membranes, i.e., membranes that besides allowing the passage of solvent let only some specific solutes to pass blocking others.

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Question # 43

What is diffusion?

Answer:-

Diffusion is the spreading of substance molecules from a region where the substance is more concentrated to other region where it is less concentrated. For example, during the boiling of water in a kitchen gaseous water particles tend to uniformly spread in the air by diffusion.

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Question # 44

What is meant by concentration gradient? Is it correct to refer to concentration gradient of water?

Answer:-

Concentration gradient is the difference of concentration of a substance between two regions. Concentration is a term used to designate the quantity of a solute divided by the total quantity of the solution. Since water in general is the solvent in this situation it is not correct to refer to "concentration of water" in a given solution.

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Question # 45

What is the difference between osmosis and diffusion?

Answer:-

Osmosis is the phenomenon of movement of solvent particles, in general water, from a region of lower solute concentration to a region of higher solute concentration. Diffusion, in the other hand, is the movement of solutes from a region of higher solute concentration to a region of lower solute concentration. One can consider osmosis as movement of water (solvent) and diffusion as movement of solutes, both concentration gradient-driven.

[Read More Answers.](#)

Question # 46

What is osmotic pressure?

Answer:-

Osmotic pressure is the pressure created in a aqueous solution by a region of lower solute concentration upon a region of higher solute concentration forcing the passage of water from that to this more concentrated region. The intensity of the osmotic pressure (in units of pressure) is equal to the pressure that is necessary to apply in the solution to prevent its dilution by the entering of water by osmosis.

It is possible to apply in the solution another pressure in the contrary way to the osmotic pressure, like the hydrostatic pressure of the liquid or the atmospheric pressure. In plant cells, for example, the rigid cell wall makes opposite pressure against the tendency of water to enter when the cell is put under a hypotonic environment. Microscopically, the pressure contrary to the osmotic pressure does not forbid water to pass through a semipermeable membrane but it creates a compensatory flux of water in the opposite way.

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Question # 47

Can solutions with same concentration of different solutes have different osmotic pressures?

Answer:-

The osmotic pressure of a solution does not depend on the nature of the solute, it depends only on the quantity of molecules (particles) in relation to the total solution volume. Solutions with same concentration of particles even containing different solutes exert same osmotic pressure.

Even when the solution contains a mixture of different solutes its osmotic pressure depends only on its total particle concentration regardless the nature of the solutes.

[Read More Answers.](#)

Question # 48

How are solutions classified according to their comparative tonicity?

Answer:-

Comparatively to other a solution can be hypotonic (or hyposmotic), isotonic (or isosmotic) or hypertonic (or hyperosmotic).

When a solution is less concentrated than other the adjective hypotonic is given and the more concentrated is called hypertonic. When two compared solutions have same concentration both receives the adjective isotonic. So this classification makes sense only for comparison of solutions.

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Question # 49

Concerning permeability what type of membrane is the cell membrane?

Answer:-

The cell membrane is a selectively permeable membrane, i.e., it allows the passage of water and some selected solutes.

Cell Membrane Review - Image Diversity: cell membrane

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Question # 50

What are the basic constituents of the cell membrane?

Answer:-

The cell membrane is formed of lipids, proteins and carbohydrates.

The membrane lipids are phospholipids, a special type of lipid to which one extremity a phosphate group is bound thus assigning electric charge to this region of the molecule. Since phospholipids have one electric charged extremity and a long neutral organic chain they can organize themselves in two layers of associated molecules: the hydrophilic portion (polar) of each layer faces outwards in contact with water (a polar molecule too) of the extracellular and the intracellular space and the hydrophobic chains (non polar) faces inwards isolated from the water. Because this type of membrane is made of two phospholipid layers it is also called bilipid membrane.

Membrane proteins are embedded and dispersed in the compact bilipid structure. Carbohydrates appear in the outer surface of the membrane associated to some of those proteins under the form of glycoproteins or bound to phospholipids forming glycolipids. The membrane carbohydrates form the glycocalyx of the membrane.

This description (with further explanations) is known as the fluid mosaic model about the structure of the cell membrane.

Cell Membrane Review - Image Diversity: phospholipid bilayer membrane proteins glycocalyx

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Question # 51

What are the respective functions of phospholipids, proteins and carbohydrates of the cell membrane?

Answer:-

Membrane phospholipids have structural function they form the bilipid membrane that constitutes the cell membrane itself.

Membrane proteins have several specialized functions. Some of them are channels for substances to pass through the membrane, others are receptors and signalers of information, others are enzymes, others are cell identifiers (cellular labels) and there are still those that participate in the adhesion complexes between cells or between the internal surface of the membrane and the cytoskeleton.

Membrane carbohydrates, associated to proteins or to lipids, are found in the outer surface of the cell membrane and they have in general labeling functions for recognition of the cell by other cells and substances (for example, they differentiate red blood cells in relation to the ABO blood group system), immune modulation



functions, pathogen sensitization functions, etc.

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Question # 52

What are differentiations of the cell membrane?

Answer:-

In some types of cells, the cell membrane present differentiations that are necessary for the specific functions of the cells. The main differentiations are the microvilli and the structures for reinforcement of adhesion or union between cells (cell junctions).

Microvilli are multiple external projections of the membrane resembling glove fingers. This differentiation is found in cells of tissues where it is advantageous to increase the size of the surface in contact with the exterior, for example, in the enteric (intestinal) epithelium for absorption of nutrients.

Membrane differentiations for reinforcement of adhesion between cells occur mainly in epithelial tissues where the need for coverage and impermeability requires cells to be "glued" to neighbouring cells. These differentiations can be interdigitations, desmosomes, tight junctions (zonula occludens), zonula adherens (adherens junctions) and gap junctions.

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Question # 53

What is the relation between concentration gradient and active and passive transport?

Answer:-

Passive transport is the movement of substances across membranes in favor of their concentration gradient, i.e., from a more concentrated region to a less concentrated region. Active transport, in the other hand, is the transport of substances across membranes against their concentration gradient, from a less concentrated to a more concentrated region. In passive transport, because it is spontaneous, there is no energy spending; the active transport however requires energy (work) to occur.

Active transport is a work to maintain or increase the concentration gradient of a substance between two regions while passive transport acts in a manner to reduce the concentration gradient.

[Read More Answers.](#)

Question # 54

What are the three main types of passive transport?

Answer:-

The three main types of passive transport are simple diffusion, osmosis and facilitated diffusion.

Cell Membrane Review - Image Diversity: passive transport

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Question # 55

What is the energy source used in active transport through biological membranes?

Answer:-

The energy necessary for active transport (against the concentration gradient of the transported substance) to occur comes from ATP molecules. The active transportation uses chemical energy from ATP.

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Question # 56

What is the difference between simple and facilitated diffusion? Facilitated by which type of molecule does the term facilitated mean?

Answer:-

Simple diffusion is the direct passage of substances across the membrane in favor of their concentration gradient. In facilitated diffusion the movement of substances is also in favor of their concentration gradient but the substances move bound to specific molecules that act as "permeabilizers", i.e., facilitators of their passage through the membrane.

Cell Membrane Review - Image Diversity: facilitated diffusion

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Question # 57

How does the intensity of simple diffusion vary in relation to the concentration gradient of the moved substance?

Answer:-

The higher the concentration gradient of a substance the more intense its simple diffusion will be. If the concentration gradient diminishes the intensity of simple diffusion diminishes too.

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Question # 58

How does the intensity of facilitated diffusion vary in relation to the concentration of the moved substance? What is the limiting factor?

Answer:-

Likewise simple diffusion facilitated diffusion is more intense when the concentration gradient of the substance increases and less intense when the gradient lessens. In facilitated diffusion however there is a limiting factor: the quantity of the permeases that facilitate the transport through the membrane. Even in a situation in which the concentration gradient of the diffusing substance increases, if there are not enough permeases to perform the transport there will be no increase in the intensity of the diffusion. This situation is called saturation of the transport proteins and it represents the point in which the maximum transport capacity of the substance across the membrane is achieved.

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Question # 59

Without saturation of transport proteins and under same concentration gradient how can the speed of simple diffusion be compared to the speed of facilitated diffusion?

Answer:-

The action of facilitator proteins in facilitated diffusion makes this type of diffusion faster than simple diffusion under equal concentration gradients of the moved substance.

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Question # 60

How does facilitated diffusion present similarities with enzymatic chemical reactions?

Answer:-

One of the main examples of facilitated transport is the entrance of glucose from the blood into cells. Glucose from blood binds to specific permeases (hexose-transporting permeases) present in the cell membrane and by diffusion facilitated by these proteins it enters the cell to play its metabolic functions.

Facilitated diffusion resembles chemical catalysis because the transported substances bind to permeases like substrates bind to enzymes and in addition after one transport job is concluded the permease is not consumed and can perform successive other transports.

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Question # 61

What are some examples of biological activities in which osmosis plays important role?

Answer:-

Hemolysis (destruction of red blood cells) by entrance of water, the hydric regulation in plants and the entrance of water in the xylem of vascular plants are all examples of biological phenomena caused by osmosis.

Excessive dilution of the blood plasma makes, by osmosis, the entrance of too much water in red blood cells and then the destruction of these cells (hemolysis). Osmosis also is the main process for maintenance of the flaccid, turgid or plasmolytic states of plant cells. Osmosis is one of the forces responsible for the entrance of water in plant roots since root cells are hypertonic in comparison to the soil.

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Question # 62

What do facilitated diffusion and active transport have in common? What are the differences between them?

Answer:-

Facilitated diffusion can be confused with active transport because in both processes there is participation of membrane proteins.

In active transport however the transported substance moves against its concentration gradient and with energy spending. Facilitated diffusion is a passive transport in favor of the concentration gradient and it does not require energy.

Cell Membrane Review - Image Diversity: active transport

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Question # 63

Which are the molecules that make possible active transport through membranes?

Answer:-

Active transport is made by specific membrane proteins. These proteins are called "pumps" because they "pump" the moving substance through the membrane using energy from ATP molecules.

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Question # 64

How does the sodium-potassium pump present in the cell membrane work? What is the importance of this protein for the cell?

Answer:-

The sodium-potassium pump is the transport protein that maintains the concentration gradient of these ions between the intra and the extracellular spaces. This protein is phosphorylated in each pumping cycle and then it pumps three sodium ions outside the cell and puts two potassium ions inwards. The phosphorylation is made by the binding of a phosphate donated by one ATP molecule that then is converted into ADP (adenosine diphosphate).

The job of the sodium-potassium pump, also known as sodium-potassium ATPase, is fundamental to keep the characteristic negative electric charge in the intracellular side of the membrane of the resting cell and to create adequate conditions of sodium and potassium concentrations inside and outside the cell to maintain the cellular metabolism.

Cell Membrane Review - Image Diversity: sodium-potassium pump

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Question # 65

What is mass transportation across the cell membrane?

Answer:-

Mass transportation is the entrance or the exiting of substances in or from the cell engulfed by portions of membrane. The fusion of internal substance-containing membranous vesicles with the cell membrane is called exocytosis. The entrance of substances in the cell after they have been engulfed by projections of the membrane is called endocytosis.

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Question # 66

What are the two main types of endocytosis?



Answer:-

Endocytosis is the entrance of materia in the cell engulfed by portions of the cell membrane.

Endocytosis can be classified as pinocytosis or phagocytosis. In pinocytosis small particles on the external surface of the membrane stimulate the invagination of the membrane inwards and vesicles full of that particles then detach from the membrane and enter the cytoplasm. In phagocytosis bigger particles on the external surface of the membrane induce the projection of pseudopods outwards enclosing the particles; the vesicle then detaches from the membrane and enter the cytoplasm receiving the name phagosome.

Cell Membrane Review - Image Diversity: pynocytosis phagocytosis

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Question # 67

How does the plant cell wall react when it is placed under hypotonic medium?

Answer:-

The plant cell wall (the covering of the cell external to the cell membrane) is made of cellulose, a polymer of glucose.

When the cell is put under hypotonic medium it absorbs too much water through osmosis. In that situation the cell wall pressure acts to compensate the osmotic pressure thus forbiding excessive increase of the cellular volume and the cell lysis.

[Read More Answers.](#)

Question # 68

What is meant by suction force of the plant cell? Does the suction force facilitate or make difficult the entrance of water in the cell?

Answer:-

The suction force (SF) is the osmotic pressure of the plant cell vacuole, i.e., of the vacuolar internal solution.

Since the vacuolar solution is hypertonic in comparison to cytosol it attracts water then increasing the cytosol concentration. With the osmotic action of the vacuole the cytosol becomes hypertonic in relation to the exterior and more water enters the cell.

[Read More Answers.](#)

Question # 69

What is the wall resistance of plant cells? Does this resistance facilitate or make it difficult the entrance of water in the cell?

Answer:-

Wall resistance, or turgor pressure (TP), is the pressure made by the distension of the plant cell wall in opposition to the increase of the cell volume. The wall resistance works against the entrance of water in the cell, i.e., it acts forcing the exiting of water and compensating the entrance of the solvent by osmosis.

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Question # 70

What does the formula $DPD = SF - TP$ mean?

Answer:-

DPD is the abbreviation of diffusion pressure deficit, SF (suction force) is the vacuolar osmotic pressure and TP is the turgor pressure.

The difference between SF and TP determines whether water tends or not to enter the cell. If $SF > TP$, $DPD > 0$ and water tends to enter the cell by osmosis. If $TP > SF$, $DPD < 0$ and water cannot enter the cell by osmosis.

[Read More Answers.](#)

Question # 71

What are the values of DPD for plant cells under hypertonic, isotonic and hypotonic media?

Answer:-

In plant cells under hypertonic medium there is loss of water for the exterior, $SF > 0$ (the vacuolar pressure is high because it is concentrated) and $TP = 0$ (there is no distension of the cell wall since the cellular volume is reduced) so $DPD = SF$. These cells are called plasmolysed cells, situation characterized by the retraction of the cell membrane that detach from the cell wall.

In plant cells under isotonic medium there is no increase of the internal water volume, $SF > 0$ and $TP = 0$ (since the cell wall is not distended). The cell membrane slightly touches the cell wall and in this situation the cell is called flaccid cell.

In plant cells under hypotonic medium there is tendency of water to enter, $SF = TP$ (since the osmotic pressure is totally compensated by the distension of the cell wall) and $DPD = 0$. The cell that expanded itself to this point is called turgid cell.

Cell Membrane Review - Image Diversity: plasmolysed cell flaccid cell turgid cell

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Question # 72

What is the formula of the DPD for withered (shrank) plant cells? How is that situation possible?

Answer:-

Withered plant cells are those that shrank due to loss of water by evaporation without enough replacement. In this situation the cell membrane retracts and detaches from the cell wall. The cell wall moreover expands in length to stimulate the entrance of water making $TP < 0$. Since $DPD = SF - TP$ and TP is negative (< 0) its formula becomes $DPD = SF + |TP|$.

[Read More Answers.](#)

Question # 73

What is deplasmolysis of plant cells?

Answer:-

The plant cell when placed under hypertonic medium loses a great amount of water and its cell membrane detaches from the cell wall. In that situation the cell is called plasmolysed cell. When the plasmolysed cell is placed under hypotonic medium it absorbs water and becomes a turgid cell. This phenomenon is called



deplasmolysis.

[Read More Answers.](#)

Question # 74

Why are salt and sugar used in the production of dried meat and dried fruits?

Answer:-

Substances that maintain highly hypertonic environment, like sugar and salt, are used in the production of dried meat, fish or fruits (for example, cod) because the material to be conserved is then dehydrated and the resulting dryness prevents the growth of populations of decomposer beings (since these beings also lose water and die).

[Read More Answers.](#)

Question # 75

What is cytoskeleton? What are its main constituents in animal cells?

Answer:-

Cytoskeleton is the cytoplasmic structure that supports the cell, keeps its shape and fixates and moves the cell organelles. It is made of an extensive network of fibers dispersed in the cytoplasm and anchored in the plasma membrane. Its components are microtubules, microfilaments and intermediate filaments.

Cell Skeleton and Cell Movement - Image Diversity: the "cell skeleton"

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Question # 76

Of which substance are microtubules made? In which structures and cellular processes do microtubules participate?

Answer:-

Microtubules are made of consecutive dimers of the protein tubulin (each dimer has an alpha and a beta tubulin associated). Microtubules participate in cell division, they are constituents of cilia and flagella and they also form the centrioles.

Cytoskeleton and Cell Movement - Image Diversity: microtubules tubulin

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Question # 77

Of which substance are microfilaments made? What are the properties of these elements that give motility to cells?

Answer:-

Microfilaments are made of actin (a protein). The contractile association of actin with myosin and other cytoplasmic proteins give to microfilaments the ability to promote cell movement.

Cytoskeleton and Cell Movement - Image Diversity: microfilaments actin and myosin intermediate filaments

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Question # 78

What are cell movements? How are these movements created?

Answer:-

Cell movements are movements performed by cell structures, like the movements of cilia and flagella, the pseudopod movements (in amoeba, macrophages, etc.), the cyclosis of the cytoplasm and the sarcomere contraction in muscle cells.

Cell movements can be created by the cytoskeleton action, by differences of viscosity among cytoplasmic regions and by intracellular contraction systems.

[Read More Answers.](#)

Question # 79

What are cilia and flagella? How do these structures acquire movement? What are some examples of ciliated and flagellated cells in humans?

Answer:-

Cilia and flagella are structures found in some prokaryotes as well in some eukaryotic cells. They play defense, nutrition and movement roles for the cell. In eukaryotic cells of protists and animals they originate from centrioles that migrate towards the plasma membrane and differentiate into structures projected outside the cell. Each cilium or flagellum is made of nine peripheral pairs of microtubules and one central pair all covered by membrane. (In bacteria, flagella are made of a protein named flagellin and there can also be fimbria made of pilin.)

In the fixation base of each cilium or flagellum in the plasma membrane there are proteins that work as molecular motors providing movement for these structures with energy spending. Due to this energy spending ciliated or flagellated eukaryotic cells have a large number of mitochondria.

In humans ciliated cells can be found, for example, in the bronchial and tracheal epithelium. In these tissues the cilia have the defensive function of sweeping mucous and foreign substances that enter the airways. Sperm cells are typical example of flagellated cells their flagellum is the propulsion equipment for the movement towards the ovule.

Cytoskeleton and Cell Movement - Image Diversity: ciliated cell flagellate cell

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Question # 80

How do the amoeboid movements occur? What are examples of beings and cells that use such movements for locomotion?

Answer:-

Amoeboid movements are created by cytoplasmic movements and plasma membrane projections called pseudopods. Their formation actively changes the external shape of some portions of the cell surface making it to move along a substratum. Pseudopods appear from differences of viscosity among neighboring regions of cytoplasm near the plasma membrane and from the contractile action of microfilaments.

Amoeboid movements occur, for example, in amoebas (a protozoan), organisms that use their movement to find food. The leukocytes, cells of the immune system, when attracted by chemical substances (immune mediators) use amoeboid movements to get out from capillaries in regions of tissue damage to participate in the



inflammatory process.

Cytoskeleton and Cell Movement - Image Diversity: pseudopods

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Question # 81

What are some examples of movement created by the contraction of sarcomeres of the muscle cells?

Answer:-

The handling of a cup of coffee, the peristaltic movements of the bowels, the cardiac beats and even a smile are examples of movement created by contraction of the sarcomeres of the muscle cells. This contraction is a type of cell movement.

[Read More Answers.](#)

Question # 82

What is cyclosis?

Answer:-

Cyclosis is a type of internal cell movement in which an oriented flow of circulating material is created and maintained in the cytoplasm by the action of microfilaments. Cyclosis is more easily observed in plant cells.

Cytoskeleton and Cell Movement - Image Diversity: cyclosis

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Question # 83

What is meant by cellular secretion?

Answer:-

Cell secretion is the elimination to the exterior of substances produced by the cell (for example, hormones, mucous, sweat, etc.)

[Read More Answers.](#)

Question # 84

Which cell organelles are well-developed in secretory cells?

Answer:-

In secretory cells, like the secretory cells of endocrine glands, organelles related to production, processing and "exportation" of substances are widely present and well-developed. These organelles are the rough endoplasmic reticulum and the Golgi apparatus.

The nuclear membrane of the secretory cells generally has more pores to allow the intense traffic of molecules related to protein synthesis between the cytoplasm and the nucleus.

Rough endoplasmic reticulum Golgi apparatus

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Question # 85

How do the rough endoplasmic reticulum and the Golgi apparatus act in the production and releasing of proteins?

Answer:-

The rough endoplasmic reticulum has in its outer membrane numerous ribosomes, structures where translation of messenger RNA and protein synthesis occur. These proteins are stored in the rough endoplasmic reticulum and later they go to the Golgi apparatus. Within the Golgi apparatus proteins are chemically transformed and when ready they are put inside vesicles that detach from the organelle. These vesicles fuse with the plasma membrane (exocytosis) in the right place and its content is liberated outside the cell.

[Read More Answers.](#)

Question # 86

What are some examples of secretory cells?

Answer:-

Endocrine and exocrine pancreatic cells, thyroid and parathyroid endocrine cells, adenohypophysis, adrenal and pineal endocrine cells, the many types of gastric exocrine and endocrine cells, the mucous secretory cells of the lungs and of the bowels, the salivary gland cells, the lacrimal gland cells, the sebaceous gland cells, the secretory cells of the ovaries and testicles, etc., are all examples of secretory cells.

[Read More Answers.](#)

Question # 87

What is extracellular digestion?

Answer:-

Extracellular digestion is that in which food breaking into utile molecules that can be internalized by the cell is done in the extracellular space, i.e., outside the cell. In extracellular digestion the cells secrete substances that break big molecules into smaller ones in the external environment. Later the cell can benefit from these products of the digestion.

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Question # 88

What is intracellular digestion?

Answer:-

Intracellular digestion, or cellular digestion, is the breaking in the interior of the cell of big molecules coming from outside or even from the own cell metabolism into



Cell Biology Interview Questions And Answers

smaller molecules. Products and residues of the intracellular digestion are used by the cell or excreted. Intracellular digestion is classified into two types: heterophagic intracellular digestion and autophagic intracellular digestion.

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Question # 89

What is the main cell organelle involved in cell digestion? What are the properties of that organelle that enable it to the task?

Answer:-

The organelles responsible for intracellular digestion are the lysosomes. Lysosomes are vesicles that contain digestive enzymes capable of breaking big molecules into smaller ones. These vesicles fuse with others that carry the material to be digested and then digestion takes place.

Cell Digestion Review - Image Diversity: lysosomes

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Question # 90

What is heterophagic intracellular digestion? How is this process accomplished?

Answer:-

Heterophagic intracellular digestion is the breaking into smaller substances of external substances engulfed in the cell by pinocytosis or phagocytosis. Phagosomes or pinosomes fuse with lysosomes making the digestive vacuoles. Within the digestive vacuoles the molecules to be digested are hydrolyzed and the products of the digestion cross through the membrane and reach the cytoplasm or they are kept inside the vacuoles. The vacuole with residues from digestion is called residual body and by exocytosis it fuses with the plasma membrane and liberates its waste in the exterior space.

[Read More Answers.](#)

Question # 91

What is autophagic intracellular digestion? Why is this type of intracellular digestion intensified in an organism undergoing starvation?

Answer:-

Autophagic intracellular digestion is the cellular internal digestion of waste and residual materials. In general it is done by lysosomes.

Autophagic intracellular digestion is intensified in situations of starvation because in such condition the cell tries to obtain from its own constituent materials the nutrients necessary to stay alive.

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Question # 92

What are some biological examples in which lysosomic enzymes play fundamental role?

Answer:-

The remodeling of the osseous tissue, the function of acrosomes in sperm cells and the elimination of the tadpole tail are examples of biological processes in which lysosomic enzymes are key factors.

The bone is a tissue made of osteoblast-containing matrix (osteoblasts are the secretory cells of the osseous matrix), osteocytes (mature bone cells) and osteoclasts (the remodeling cells). Osteoclasts are responsible for the continual renovation of the osseous tissue since their lysosomic enzymes digest the osseous matrix.

The sperm acrosome, for carrying digestive enzymes within, is responsible for the perforation of the egg cell membrane in the fertilization process. The acrosome, located in the anterior end of the sperm cell, is a specialized region of the Golgi apparatus that accumulates great amount of digestive enzymes.

In tadpoles the tail regresses while the organism develops into an adult frog. This tissue destruction is a digestion of the tail own cells and extracellular materials and it is made by lysosomes and their enzymes. The complete digestion of a cell by its own mechanisms is called autolysis, a type of apoptosis (cell suicide).

[Read More Answers.](#)

Question # 93

How are cells with delimited nucleus called? What are the main elements of the nucleus?

Answer:-

Cells with delimited nucleus are called eukaryotic cells. Organisms composed of one or more eukaryotic cells are called eukaryotes.

The main elements of the nucleus are the chromatin (made of DNA molecules), the nucleolus, the karyolymph, or nucleoplasm, and the nuclear membrane (or karyotheca).

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Question # 94

Do all eukaryotic cells have nucleus and only one nucleus?

Answer:-

There are eukaryotic cells without nucleus and others with more than one nucleus. Osteoclasts, the cells responsible for resorption of the osseous matrix, for example, are multinucleate cells; striated muscle fibers are multinucleate too. Red blood cells are example of enucleated specialized cells.

Cell Nucleus Review - Image Diversity: cell nucleus multinucleate cells enucleated cells

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Question # 95

Of which substances is chromatin made?

Answer:-

Chromatin is made of DNA molecules associated to proteins called histones.

Cell Nucleus Review - Image Diversity: chromatin

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Question # 96

What are heterochromatin and euchromatin?

Answer:-

Chromatin is uncondensed nuclear DNA, the typical DNA morphology in interphase (the phase of the cell cycle in which the cells is not dividing itself). In this phase of the cell cycle chromatin can be found as heterochromatin, more condensed and dark (in electronic microscopy) portions of DNA molecules, and as euchromatin, less condensed and lighter portions of DNA molecules.

Since it is uncondensed the euchromatin is the biologically active portion of the DNA, i.e., the region that has active genes to be transcribed into RNA. The heterochromatin represents the inactive portions of the DNA molecule.

Cell Nucleus Review - Image Diversity: heterochromatin euchromatin

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Question # 97

What is the relation between the concepts of chromatin and chromosome? Are euchromatin and heterochromatin part of chromosomes?

Answer:-

Every filament of chromatin is a complete DNA molecule (a complete double helix), i.e., a complete chromosome. A DNA molecule may form euchromatin and heterochromatin portions thus both are part of chromosomes.

Cell Nucleus Review - Image Diversity: chromosome structure

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Question # 98

In the phase when the cell is not dividing (interphase) is there activity within the cell nucleus?

Answer:-

In the interphase there is intense metabolic activity in the cell nucleus: DNA is duplicating, euchromatin is being transcript and RNA is produced.

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Question # 99

How are the concepts of chromosome, chromatin and chromatids related? In which phase of the cell cycle does DNA duplicate?

Answer:-

Chromatin is a set of filamentous DNA molecules dispersed in the karyoplasm forming euchromatin and heterochromatin portions. Each chromatin filament is a complete chromosome (a DNA molecule, or double helix). The chromatin of the human somatic cell is formed by 46 DNA molecules (22 homologous chromosomes and 1 pair of sex chromosomes).

In interphase the cell prepares itself for division and duplication of DNA molecules occurs. The duplication of every DNA molecule forms two identical DNA double helix bound by a structure called centromere. In this phase each identical chromosome of these pairs is called chromatid. It is also during the interphase that the chromatids begin to condensate assuming the thicker and shorter shape typical of chromosome illustrations. So the phase of the cell cycle in which DNA duplicates is the interphase.

Some Biology textbooks call chromosome an unique filament of chromatin as well as the condensed structure made of two identical chromatids after the DNA duplication. Rigorously the pair of identical chromatids bound in the centromere are two copies of the same chromosome and therefore they are two identical chromosomes (and not only one).

Cell Nucleus Review - Image Diversity: chromatids

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Question # 100

What is the structure that maintains identical chromatids bound?

Answer:-

The structure that maintains identical chromatids bound is the centromere.

Cell Nucleus Review - Image Diversity: centromere

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Question # 101

How the chromosome region where the centromere is located is called? How are chromosomes classified in relation to the position of their centromere?

Answer:-

The chromosome region where the centromere is located is called primary constriction. In microscopic view this region is narrower (a stricture) than most part of the chromosome.

According to the position of the primary constriction the chromosomes are classified as telocentric, acrocentric, submetacentric or metacentric.

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Question # 102

What are the primary and the secondary constrictions of a chromosome? What is the other name given to the secondary constriction?

Answer:-

Primary constriction is the narrower region of a condensed chromosome where the centromere, the structure that unites identical chromatids, is located. Secondary constriction is a region similar to the primary constriction, narrower than the normal thickness of the chromosome too, and in general it is related to genes that coordinate the formation of the nucleolus and control the ribosomal RNA (rRNA) synthesis. For this reason the secondary constrictions (that can be one or more in chromosome) is called nucleolus organizer region (NOR).

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Question # 103



What are homologous chromosomes? Which are the human cells that do not have homologous chromosomes?

Answer:-

Chromosomes contain genes (genetic information in the form of nucleotide sequences) that command the protein synthesis thus regulating and controlling the activities of the cell. In the nucleus of somatic cells of diploid beings every chromosome has its correspondent homologous chromosome, both containing alleles of the same genes related to same functions. This occurs because one chromosome of one pair comes from the father and the other comes from the mother of the individual. The chromosomes that form a pair with alleles of the same genes are called homologous chromosomes. In humans, there are 22 pairs of homologous chromosomes plus the pair of sex chromosomes (the sex chromosomes are partially homologous).

The only human cells that do not have homologous chromosomes are the gametes since during meiosis the homologous chromosomes are separated.

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Question # 104

What is the difference between the concepts of karyotype and genome?

Answer:-

Genome is the set of DNA molecules that characterizes each living being or each species. The concept then includes the specific nucleotide sequence of the DNA molecules of each individual or species. Karyotype is the set of chromosomes of individuals of a given individual or species concerning morphology and number of each chromosome or pair of homologous.

Cell Nucleus Review - Image Diversity: karyotype

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Question # 105

Can two normal individuals of the same species with sexual reproduction have identical genomes and identical karyotypes? How the human karyotype is usually represented?

Answer:-

Except for clones (individuals created from nucleus transplantation, like the Dolly sheep) and monozygotic twins, it is very improbable the genomes of two individuals of the same species and generated by sexual reproduction to be identical. Nevertheless the karyotypes of two normal individuals of the same species and of the same sex are always identical. The human normal karyotype is represented by the formula 44+XX for women and 44+XY for men.

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Question # 106

What is the other name given to sex chromosomes? What is the function of sex chromosomes?

Answer:-

Sex chromosomes are also called allosomes (the other chromosomes that are not sex chromosomes are called autosomes).

Sex chromosomes get such name because they have genes that determine the sex (male or female) of an individual. Sex chromosomes also have genes related to other biological functions.

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Question # 107

How many chromosomes does a human normal haploid cell have? How many chromosomes does a human normal diploid cell have? How many are the sex chromosomes within each of them?

Answer:-

The human haploid cell is the gamete (egg cell and sperm cell). The human gamete has 22 autosomes and 1 allosome, i.e., 23 chromosomes. The diploid cell is the somatic cell and it has 44 autosomes and 2 allosomes, i.e., 46 chromosomes.

Gametes have one sex chromosome and somatic cells have two sex chromosomes.

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Question # 108

Do phylogenetically proximal species have cells with proximal chromosome counts?

Answer:-

The number of chromosomes typical of each species is proximal for phylogenetically proximal species (for example, orangutan, gorilla, chimpanzee and human). But it is not impossible that evolutionary distant species, like rat and oat, bears similar karyotypes and the same total number of chromosomes.

Even presenting equal number of chromosomes evolutionary distant species have radically different characteristics since the quantity and the sequence of nucleotides that compose their respective DNA molecules are quite different.

[Read More Answers.](#)

Question # 109

What is the nucleolus?

Answer:-

The nucleolus is a small and optically dense region in the interior of the cell nucleus. It is made of ribosomic RNA (rRNA) and proteins. One nucleus can have one or more nucleolus.

Cell Nucleus Review - Image Diversity: nucleolus

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Question # 110

Of which structures is the nuclear membrane composed?

Answer:-



Eukaryotic cells have nucleus delimited by two juxtaposed membranes that continue with the membrane of the endoplasmic reticulum. The nuclear membrane, or karyotheca, presents pores through which substances pass. There are also ribosomes adhered to its external surface.

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Question # 111

Is there any difference between karyotype and a genome, either yes or no explain with solid reason?

Answer:-

Yes

Karyotype is the representation of all the chromosome pairs. It helps you study the chromosomal abnormalities like that of Trisomy, Monosomy etc. term karyotype is generally in reference to chromosomes

Genome- it is the complete set of genes in haploid set of chromosome. Term genome is in reference to all the genes.

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