

Eukaryotic Cell Organelles

_____ : This is the most obvious organelle in any eukaryotic cell. It is enclosed in a double membrane and communicates with the surrounding cell organelles. Within each _____ is chromatin that contain the organism's genome (genes/DNA).

_____ : This prominent structure in the _____ is the _____. It produces ribosomes, which take positions on the rough endoplasmic reticulum where they are critical in protein synthesis.

_____ : This is the "soup" within which all the other cell organelles reside and where most of the cellular metabolism occurs. Though mostly water, the _____ is full of proteins that control cell metabolism.

_____ : This is a collective term for the _____ plus the organelles suspended within the _____.

_____ : The MICROTUBULE ORGANIZING CENTER (MTOC), is an area in the cell where microtubules are produced. Plant and animal cell _____ play similar roles in cell division, and both include collections of microtubules, but the plant cell _____ is simpler and does not have centrioles.

_____ : (animal cells only): This is a ring of nine groups of fused microtubules. There are three microtubules in each group. Microtubules (and _____) are part of the cytoskeleton. In the complete animal cell centrosome, the two _____ are arranged such that one is perpendicular to the other.

_____ : This apparatus is a membrane-bound structure with a single membrane. It is a stack of membrane-bound vesicles that are important in packaging macromolecules; such as protein for transport elsewhere in the cell.

_____ : These contain enzymes necessary for digestion. They are common in animal cells, but rare in plant cells. The enzymes of plant cells are more often found in the vacuole.

_____ : These are membrane-bound packets of enzymes. In plant cells, they play a variety of roles including converting fatty acids to sugar and assisting chloroplasts in photorespiration. In animal cells, they protect the cell from its own production of toxic hydrogen peroxide.

_____ : This contains cell secretions - e.g. hormones, neurotransmitters. It is at the Golgi apparatus and is transported to the cell surface for release.

_____ : Every cell is enclosed in this organelle and it is a protective barrier to the uncontrolled flow of water.

_____ This provides the energy a cell needs to move, divide, produce, etc... are the power centers of the cell. They are about the size of bacteria but may have different shapes depending on the cell type. _____ are membrane-bound organelles, and like the nucleus have a double membrane.

_____ : This is a membrane-bound sac that plays roles in cellular digestion and the release of cellular waste products. In animal cells, these are generally small, but _____ tend to be large in plant cells and play several roles: storing nutrients and waste products, helping increase cell size during growth, and even acting much like lysosomes of animal cells.

_____ **(plant cells only)**: Plant cells have a rigid, protective _____ made up of polysaccharides. In higher plant cells, that polysaccharide is usually cellulose. The _____ provides and maintains the shape of these cells and serves as a protective barrier. Fluid collects in the plant cell vacuole and pushes out against the _____. This pressure is responsible for the crispness of fresh vegetables.

_____ **(plant cells only)**: These are specialized organelles found in all higher plant cells. These organelles contain the plant cell's chlorophyll responsible for the plant's green color and the ability to absorb energy from sunlight. This energy is used to convert water plus carbon dioxide into metabolizable sugars by the biochemical process of photosynthesis. _____ have a double outer membrane.

_____ : Throughout the eukaryotic cell, especially those responsible for the production of hormones and other secretory products, is a vast network of membrane-bound vesicles and tubules called the _____, or ER for short. Smooth ER plays different functions including lipid (fat) and steroid hormone synthesis, and the breakdown of lipid-soluble toxins in liver cells.

_____ : This organelle appears "pebbled" in an electronic microscope due to the presence of numerous ribosomes on its surface. Proteins synthesized on these ribosomes collect in the _____ for transport throughout the cell.

_____ : These are packets of RNA and protein that play a crucial role in both prokaryotic and eukaryotic cells. They are the site of protein synthesis.

_____ : As its name implies, the _____ helps to maintain cell shape. But the primary importance of this organelle is in cell mobility. The internal movement of cell organelles, as well as cell locomotion and muscle fiber contraction could not take place without this organelle.

Prokaryotic Cell Organelles

_____ : DNA in the bacterial cell is generally confined to this central region. Though it isn't bounded by a membrane, it is visibly distinct from the rest of the cell interior.

_____ : This is sometimes referred to as the bacterial chromosome. It is a long double strand of DNA, usually in one large circle. It includes most of the genetic material of the organism.

_____ : These are small circular DNA fragments found in the cytoplasm that contain code responsible for antibiotic resistance and other characteristics.

_____ : This internal "soup" of the bacterial cell is bounded on the outside by the cell envelope. The _____ is mostly water, but within it are the bacterial inclusions - nucleoid, plasmids, ribosomes and storage granules - as well as the components necessary for bacterial metabolism.

_____ : Some bacteria can survive hostile environments, often for long time periods, by bundling their genetic material in a tough internal structure. _____ can withstand heat, cold, radiation, and lack of nutrition.

_____ : Though smaller than the _____ in eukaryotic cells, these inclusions have a similar function in translating the genetic message in messenger RNA into the production of peptide sequences (proteins).

_____ : These store nutrients and reserves of glycogen, lipids, polyphosphate, or in some cases, sulfur or nitrogen.

_____ : This is a lipid bilayer much like the cytoplasmic membrane of other cells. There are numerous proteins moving within or upon this layer that are primarily responsible for transport of ions, nutrients and waste across the membrane.

_____ : maintains the overall shape of a bacterial cell.

_____ : This layer of protein protects the bacterial cell and is often associated with pathogenic bacteria because it serves as a barrier against white blood cells.

_____ : These hollow, hair like structures made of protein allow bacteria to attach to other cells.

_____ : The purpose of this organelle is motility. Flagella are long appendages which rotate by means of a "motor" in the cell envelope.