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Beef Shanks Editorial Suggestions (Mark Johnson)

The cell membrane is like the cell's border patrol. It is involved in many things such as diffusion, osmosis, endocytosis and exocytosis. It is a semi permeable bilayer that chooses what it lets in and what it lets out.

WHAT WOULD HAPPEN? Without the cell membrane, there would be no cells. ~~Aside from the~~ ~~fact that~~ There would be nothing to decide what would go in and out of the cell. There would be nothing to keep the organelles from maintaining their positions ~~amongst in relation to~~ one another ~~due to the fact that~~ because they would no longer have anything to contain them. More or less, the cell membrane is like an organism’s skin.

The cytoskeleton makes up the structural integrity of the city. It is the steel girders, the cement foundations, even the subway system and it is all ~~out of~~ constructed from protein. It helps the cell keep its shape. The cytoskeleton is made of three distinct parts; ~~the~~ Actin Filaments, Intermediate Filaments, and the Microtubules.

WHAT WOULD HAPPEN? Without the cytoskeleton the cell would be a shapeless blob of organelles floating around haphazardly. There would be no way to transport important materials throughout the cell and it would not be able to move anywhere. (explain movement?)

Function:
Chromosomes work with other nucleic acids in the cell to build proteins and help in cell division. You will most likely find mRNA in the nucleus with the DNA. Transfer RNA (tRNA) is found outside of the nucleus in the [cytosol](http://www.biology4kids.com/files/cell_cytoplasm.html). When the chromosomes are visible, cells with two complete sets of chromosomes are called diploids (46 in a human). Most cells are diploid. Cells with only one set (23 in a human) are called haploid cells. Haploids are most often found in cells involved in sexual reproduction such as a sperm or an egg. Haploid cells are created in cell division termed [meiosis](http://www.biology4kids.com/files/cell2_meiosis.html). What is the sentence about tRNA doing here?

These filaments act very much the same as Actin filaments in the sense they are the common structural support of most cells and made of keratin which is found in your hair, nails, and skin. They help stabalize the structure of the nuclear envelope and also help hold the nucleus in a complex of "cables" in many cells.
C) Microtubules
The Microtubules are essential to cell function. They are formed as long hollow cylinders made of 13 protofilaments which in turn are made of alpha and beta tublin. Microtubules in the cell are organized by the centrosome, a nine-triplet set of microstubules that aid in cell division, and in other formation they make important cell structures like flagella. They also form togeter in tripelts to make centrioles which are vital to cell division. They are used mainly for cell transport like a "subway system" moving along vesicles and mitochondria using ATP as the energy for the proteins in them that move the organelles. Such protein motors are kinesins, moving toward the plus end of the microtubles, and the dyneins, moving toward the minus end. Filaments may be the "cables" of the cell but microtubules are the "support beams." Oops, lots of typing erors!

**Smooth Endoplasmic Reticulum**
The smooth ER is more or less the organizer of internal activities. The membranes of the smooth ER contain many embedded enzymes, most of which are active only when associated with a membrane. Enzymes anchored inside the ER catalyze the synthesis of a variety of carbohydrates and lipids.In the live~~r,~~ the enzymes of the smooth ER are involved in the detoxification of drugs including amphetamines, morphine, codeine, and phenobarbital.

The flagella are like the cars of the city. They help to move things around with ~~a~~ quick, vibrating motions. The whip-like motion produced by flagella help to move the cell and substances on the cell.

WHAT WOULD HAPPEN?
Without flagella, ~~the~~ cells would be unable to move around unable to remove substances from on its surface. It wouldn't be able to swim towards sunlight or other nourishment.
Plural goes with plural!

**A driving force occurs as protons accumulate ~~ing~~ between the membrane and the cell wall. Most bacterial flagella can rotate both counterclockwise and clockwise and this rotation contributes to the bacterium's ability to change direction as it swims. A protein switch in the molecular motor of the body controls the direction of rotation.**

Lysosomes are actually membranous sacs filled with enzymes. They are spherical bags like structures that are bound by a single layer membrane. Shapes and sizes vary among ~~between~~ organisms. Lysosomes are surrounded by their own membranes because they are primarily acidic and need to protect the rest of the cell from (the digestive enzymes within?) ~~themselves~~. Nucleases, proteases, lipases and carbohydrases are enzymes present in lysosomes that are used to dissolve the wastes.

**Function**Lysosomes act as the disposal system ~~of~~ for the cell. They break down complex proteins, carbohydrates, lipids and other macromolecules into simpler compounds. These simple compounds are returned to the cytoplasm and recycled ~~are used~~ as new cell building materials. They are used for digestion of cellular waste products, dead cells or extracellular material such as foreign invading microbes, that pose a threat to the cell (by phagocytosis process ?.) Another interesting function of the lysosomes is to repair ~~the~~ damage to the plasma membrane. They serve as membrane patches and help in sealing ~~the~~ wounds in the plasma membrane. Lysosomes are also involved in programmed cell death, or autolysis, which is a catabolic process involving degradation of the cell's own components.

The mitochondria act as the power plants of the cell.They are organelles that act like a digestive system that takes in nutrients, breaks them down, and ~~creates~~ captures energy for the cell. The process of ~~creating~~ capturing ~~cell~~ energyfrom food is known as cellular respiration.

WHAT WOULD HAPPEN?
Mitochondria ~~is~~ are the organelles responsible for respiration in the cell...ie it ~~produces~~ captures (energy can neither be created nor destroyed) the energy that the cell needs to function. Without mitochondria ~~the~~ cells would die.

The nucleolus is the mayors office in our city inside of city hall. It's main function is to assemble ribosomal subunits in eukaryotic cells.

WHAT WOULD HAPPEN? Without a nucleolus the cell
would have now way to produce ribosomes and many of the proteins the cell needs to survive would never be made.