Energy Production in the Human Body

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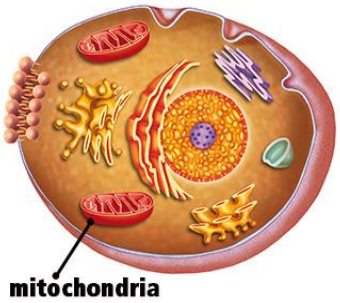
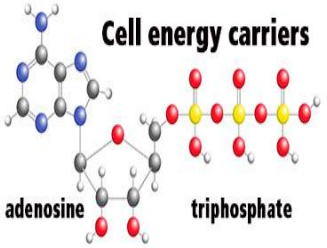
Mitochondria - The Cellular Engines

Human Cell



So lets make it as simple as possible. You know that the difference between you being alive versus you being dead is that the electricity has stopped flowing. The EKG and EEG are flat. We have the exact same composite of chemicals, but the flow of electrons has ceased. The living body is electrical in nature, since being alive requires electrons to be continually flowing in and out of our cell membranes. In fact we capitalize on this electricity by measuring the flow of electricity in the heart with the EKG or electrocardiogram. We measure the electricity of the brain with the EEG or electroencephalogram. We measure the electricity in a muscle with the electromyogram or EMG. And we define death as absence of electrical signals.

The human body is composed of an estimated 37 trillion cells. Each cell has hundreds of mitochondria needed to produce cellular energy which is the driving force of life and cellular metabolism. Our cells are like mini-factories powered by oxygen we breathe and the nutrients we digest and ignited by chemicals and electrons stored within the cells mitochondria or cellular batteries. Each human cell is designed to perform different functions, all working symbiotically to propel life in the body. Bone marrow cells manufacture the red blood cells which deliver nutrients and oxygen to the cells of the body, while removing toxins. Other cells such as those in the lymphatic system, liver and kidneys combine to perform tasks such as cleaning the blood. Whatever the specific cellular function, each cell is powered by the same process



Mitochondria - Rechargeable Energy

Human cells use nutrients and oxygen in a complex bio-chemical process known as the Krebs Cycle to produce intra cellular energy called adenosine triphosphate or ATP. The phosphate groups in this energy carrier are held together by very high energy chemical bonds. Under certain conditions one of the phosphates can break away, releasing energy. The energy released is used for energy hungry reactions that keep a cell alive and impact directly on our health. When a phosphate is released what is left is adenosine diphosphate (ADP), or spent fuel cells. These spent fuel cells are recharged from ADP to ATP. This process requires the infusion of energy, which comes from the food we eat.

How the energy factories recharge the energy carriers

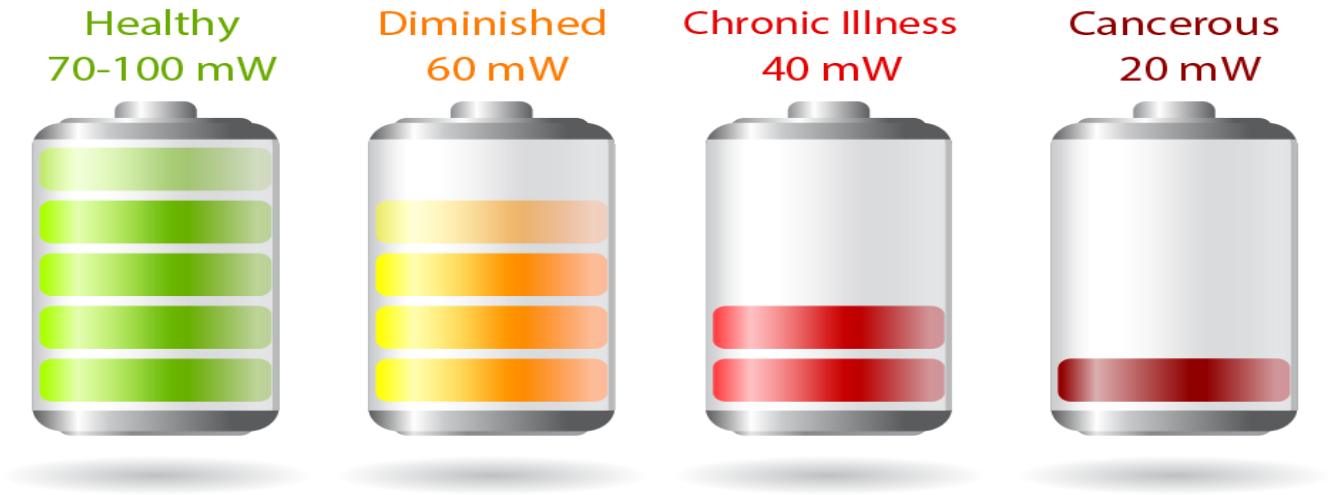
All cells contain mitochondria which are the energy factories of the cell. Mitochondria take in molecules derived from food with lots of chemical bond energy, which are the breakdown products of sugars and fats. These fuel molecules are disassembled inside the mitochondria to release their chemical bond energy. This energy is in the form of electrons. Pumps embedded in the cell membrane push hydrogen ions obtained from the fuel molecules into the inner membrane sack within the mitochondria. These are some of the raw materials for energy production.

The role of oxygen

Oxygen has a powerful attraction for electrons and is used to recharge the ADPs (flat batteries) turning them into ATPs (charged batteries). Oxygen has a powerful pull on electrons generated by the mitochondria, and uses most of the energy in the fuel molecules to push the hydrogen ions through the cell ATP synthase enzymes, recharging the flat battery (ADP) into a charged battery (ATP) by adding a phosphate ion to it. Without oxygen the cell can only make 2 ATPs for every sugar molecule metabolized. With oxygen the same cell can produce 38 ATPs from each sugar molecule.

Cell batteries

Human cells maintain an electrical voltage across their membrane. Each cell is designed to have a positive charge on the outside and a negative charge on the inside. The outside is charged with Sodium ions, while the inside of the cell is charged with potassium ions. The two charges are separated by the cell membrane which serves as an insulator. Within the cell are ion pumps which pump ions into and out of the cell through the cell membrane. More potassium ions are pumped into the cell while sodium ions are pumped out of the cell, positively charging the cell. The difference in electrical potential (voltage) across the membrane is referred to as trans-membrane Potential (TMP).



This process of charging the cells creates a second type of "cell battery" or energy storage, (ATP is the first).
Cells will power-down due to the aging process, stress, unhealthy diet, and the toxic environment we live in. researchers found healthy people had cell voltages of 70-100 mV, people with chronic illnesses had cell voltages between 30-50 mV, whereas cancer patients displayed cell voltages less than 15-20 mV. Diminished cellular voltage has a direct correlation to disease and sickness. Cancer cannot thrive in highly charged cells. This is why we never hear of cancer of the heart, as it is the muscle that has the highest voltage of any organ in the body.

Energizing the body

The energy produced during the ATP bio-electrical process empowers the body's components to perform the function for which they were designed, such as respiration, circulation, movement, digestion, reproduction, and all organ functions.

PEMF - Energy medicine for the body's cells

PEMF therapy enhances the work of charging the batteries (transforming the mitochondria's ADP to ATP). It stimulates all the components involved in delivering the oxygen and nutrients to the mitochondria for energy (ATP) production. PEMF enhances the body's delivery systems including circulation and hydration. It increases oxygen absorption by energizing the cellular pumps, which boost the absorption of vital nutrients, and the expulsion of waste toxins from the metabolic process. The energized cells have an increased charge (TMP), which maximizes the aerobic respiration (with oxygen) of the body for optimum energy production (ATP).

Anaerobic respiration

Cells can still create energy without oxygen in a process called anaerobic respiration. This process is extremely inefficient, producing only 2 ATP for every molecule of sugar processed (aerobic respiration produces 38). Anaerobic respiration also creates toxic byproducts such as lactic acid and slows down the body's ability to heal itself as infections occur more easily in an acidic environment that lacks oxygen. If the body is not delivering enough oxygen for the mitochondria to create ATP then it will result in fermentation.
Disease thrives in an acidic environment, promoting infection and slowing down the healing process.
When cells are damaged, diseased or aging, it requires even more energy to be able to repair and regenerate health new cells necessary to sustain life.

We combine several safe, natural FDA approved therapies to assist in the body's natural repair process.