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Difference between photosynthesis and respiration pdf

Both cellular breathing and photosynthesis are parts of a mutually beneficial relationship. Photosynthesis cannot occur without cellular breathing and cellular breathing can certainly not take place without the photosynthesis. Photosynthesis and cellular breathing are in many ways the reverse of each other. Photo synthesis is an anabolic process, while cellular breathing is a catabolic process. Let's explore more differences between cellular breathing and photosynthesis updated 24 April 2019 By David Kennedy Photosynthesis is the process used by plants and some bacteria to create energy from sunlight. Chlorophyll is the green pigment in plants responsible for this conversion process. In all other living things, they rely on the process of breathing to stay alive. Breathing is the process of taking oxygen from the air and cycling it through the lungs, which then gives oxygen to use blood in the body. The carbon dioxide waste was suspended from the lungs. Cellular breathing uses glucose, or sugars, of food molecules and turns it into carbon dioxide, water, and ATP a nucleotide essential for the body. Photo synthesis converts mild energy into chemical energy, and stores it in sugar. This process occurs in the chloroplast, using chlorophyll. The chemical formula for the process requires six molecules of carbon dioxide and six molecules of water plus the energy from the light. It creates a sugar chain and six units of oxygen. Chlorophyll is green because the light required for photo synthesis is red and blue light, let green light be reflected back to our eyes. Photosynthesis occurs in the leaves of plants with little to no one in the stems. Plant leaves are made of upper and lower epidermises, mesofil, veins and stomates. Mesophyll is the layer of the plant containing chloroplast and is the only place photo synthesis occurs. The energy taken is stored as ATP (adenosine triphosphate). It is necessary for energy storage and is made of the nucleotide adenine with ribose sugar. The respiratory system allows living creatures that are not plants to obtain oxygen from the air for use in the blood and cells. Oxygen is a much-needed nutrient and living organisms can survive roughly only for minutes without it. Even if oxygen flow is restrained, the damage can be irreversible. Alveoli is responsible for exchanging oxygen-rich air with carbon dioxide rich blood cells. Diffusion occurs due to the pressure difference between alveoli, which is high, and the pressure of blood, which is lower. Blood cells take the oxygen and alveoli take the carbon dioxide, which is then exhaled. Cellular breathing first breaks down glucose in pyruvic acid, and then the pyruvic acid is oxidized in carbon dioxide and water. This process usually occurs in the itosol and mitochondria of eukaryotic cells. Mitochondria are organelles responsible for converting potential energy into The main difference between between and breathing is where it occurs, one found in plants and some bacteria and the other being in most of every other living thing. The other difference is that plants require sunlight for the process to prevent while breathing does not. But there is an important mutual relationship between the two processes due to the ingredients needed, and two products produced. As plants take carbon dioxide and expel oxygen, and most other living things take in oxygen and expel carbon dioxide, the importance of both systems working in unison is obvious. About author David Kennedy attended Purdue University in West Lafayette, Indiana. After graduating with a Bachelor of Creative Writing, he continued his writing career through online freelance work with Demand Studios. Kennedy writes information articles related to health, medicine, industry, computers and education. In many ways, photo synthesis and cell breathing are supplementary reactions within the environment The products of photo synthesis function as the input of cell breathing (oxygen and glucose)The products of cell breathing function as the input of photo synthesis (carbon dioxide and water)Most producers (ie. Photo photototrophs) undertake both photo synthesis and cell spiraling to survive Consumers (i.e. heterotrophs) only undertake cellal breathing, but will interact with photo synthesis between Processes SimilarPhoto synthesis and cell resistance both the production of chemical energy (ATP) In photo synthesis, ATP produced via light energy (photophosphosifis) and used to make organic moleculesIn cell breathing, ATP is manufactured by breaking down organic molecules (oxidative phosphorus) in both cases, the production of ATP involves an electron transport chain and chemiosmosisIn photo synthesis, electrons are donated by chlorophyll and protons collected within the lumen of the thylakoidIn cell breathing, electrons donated by hydrogen bearers and protons collected in the intermediate space comparison of ATP Production DifferencesPhoto synthesis and cell recovery is in many respect the reverse Of each other Photo synthesis is an anabolic process, While cell escaping is a catabolic process Photo synthesis: Water is broken down to oxygen to release electrons for an electron transport chain electrons from the transport chain incorporated by hydrogen carriers (NADPH specifically) Cell Respiration: Use the Krebs cycle to break down glucose (releases hydrogen carriers and carbon dioxide Hydrogen carriers release electrons for an electron transport chain (NADH and FADH2 specifically)Electrons from the transport chain are incorporated by oxygen (to form water)Differences between Photo Synthesis and Cell Reef The relationship between photosynthesis and cellular breathing is such that the products of one system are the reactants the other. Photo synthesis involves the use of energy from sunlight, water and carbon dioxide to produce glucose and oxygen. Cellular breathing uses glucose and oxygen to produce carbon dioxide and water. To emphasize this point even more, the equation for photo synthesis is the opposite of cellular breathing. Humans, animals and plants depend on the cycle of cellular breathing and photosynthesis for survival. The oxygen produced by plants during photo synthesis is what inhales humans and animals for the blood to transport to the cells for breathing. The carbon dioxide produced during breathing is exempt from the body and is absorbed by plants to help provide the energy they need for growth and development. This is the nymph-ending cycle that sustains life on earth. The process of photo synthesis is used by plants and other photo synthetic organisms to produce energy while the process of cellular breathing breaks the energy for use. Despite the differences between these two processes, there are some similarities. For example, both processes synthesize and use ATP, the energy currency. Here are some of the similarities and differences between these two systems. Similarities between Photo Synthesis and Cellular Breathing Comparative FeaturesPhotosinteseCellular Respirational Oxidation Response Electron transport chain (ETC) Synthesize ATP useS ATP PhosphorusI electron bearers Differences between Photo Synthesis and Cellular Breathing Comparative FeaturesPhotoscellular Respiration Prevents In... Plants, Algae and Photosynthetic BacteriaAll Living Organisms Function/PurposeCapture, converted and storage energy – light energy from the sun is converted into chemical energy and stored into the tires of glucoseRelease energy – chemical energy stored in glucose is released to produce ATP for the cell Reactants/InputsCarbon dioxide, Water and Mild Energy Glucose and oxygen metabolic process Anabolic – CO2 and energy of ATP and NADPH are used to build glucose moleculesCatabolic – glucose is broken down to produce CO2 and energy in the form of ATP, NADH and FADH2 LocationChloropla The plant Cell Glycolycolycolycolysis occurs in the cytolasses while the Mitochondria are the site of the Krebs's Cycle and Electron Transport Chain (ETC) Source of EnergySunlightGlucose (sunlight is not required) Electron CarriersNADPHNADH and FADH2 StagesLight Dependent Reactions – Mild Energy and Water are used to produce ATP and NADPH Calvin Cycle – Carbon dioxide and the energy of ATP and NADPH are used to produce glucose glycose – Glucose is combined with ATP to produce piruvate Molecules, NADH and more ATP Pyruvate Oxidation - Pyruvate molecules are broken down into Acetyl-CoA (2-carbon composite) and CO2 produced Krebs's Cycle – Acetyl-CoA is combined with 4-carbon molecules to form the 6-carbon citrate molecules and ATP Electron Transport Chain – Energy stored in NADH and FADH2 during the Krebs cycle is used Generate ATP. Water, NAD + and FAD Products/ Depletion Glucose and OxygenCarbon dioxide and Water Comparison6CO2 + 6H2O —> C6H12O6 + 6O2 The cycle of photo synthesis and breathing > maintains the balance of oxygen and carbon dioxide. Photo synthesis produces the oxygen to supplement used by living organisms during breathing. Carbon dioxide produced during breathing is one of the reactant plants that must perform photosynthesis. Photosynthesis and cellular breathing are both part of a mutually beneficial relationship. Cellular breathing cannot take place without photo synthesis, and photo synthesis certainly cannot take place without the help of his partner. Partner.

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