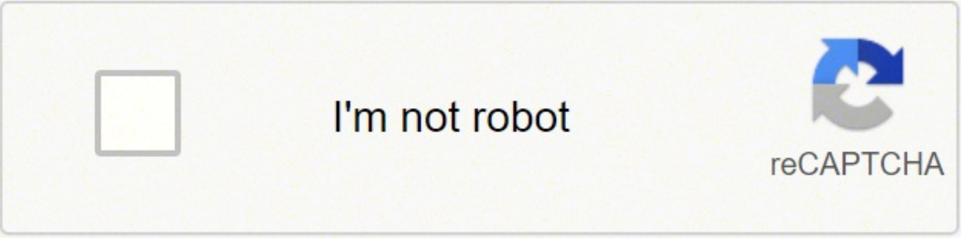
Comparing photosynthesis and respiration worksheet



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Comparing photosynthesis and respiration worksheet

Comparing photosynthesis and cellular respiration worksheet answer key. Comparing and contrasting photosynthesis and cellular respiration worksheet. Comparing and contrasting photosynthesis and cellular respiration worksheet answers. Comparing photosynthesis and cellular respiration worksheet.

Cells fall into one of two major categories: prokaryotic and eukaryotic. The predominantly monocellous organisms of the Bacteria and Archaea domains are classified as prokaryotes (proâ=first; âkaryonâ=nucleus). Animal cells, plant cells, fungi and protists are eukaryotes (euâ = true). All cells share four common components: 1) a plasma membrane, an outer covering that separates the inside of the cell from its surrounding environment; 2) the cytoplasm, consisting of a gel-like region within the cell where other cellular components are found; 3) DNA, the genetic material of the cell; and 4) ribosomes, particles that synthesize proteins. The components of Prokaryotic Cells Prokaryotes differ from eukaryotic cells in several important ways. A prokaryotic cell is a simple, mono-celled (unicellular) organism that lacks a nucleus, or any other membrane organelle. Soon we will come to see that this is significantly different in eukaryotes. Prokaryotic DNA is found in the central part of the cell: a dark region called the nucleoid (Figure 1). Figure 1 This figure shows the generalized structure of a prokaryotic cell. Unlike Archaea and eukaryotes, bacteria have a cell wall made of peptidoglycan, made up of sugars and amino acids, and many have a polysaccharide (carbohydrate) capsule (Figure 1). The cell wall acts as an additional protective layer, helps the cell to keep its shape, and prevents it from Dehydration. The capsule allows the cell to attach to surfaces in its environment. Some prokaryotes have flagella, pili, or fimbriae. Flagella are used for locomotion, while most piles are used to exchange genetic material during a type of reproduction called conjugation. Components of eukaryotic cells In nature, the relationship between form and function is evident at all levels, including the cell level, and this will become clear as we explore eukaryotic cells. The principle "form follows function" is found in many contexts. For example, birds and fish have rational bodies that allow them to move quickly through the medium in which they live, be it air or water. It means that, in general, you can deduce the function of a structure by looking at its shape, because the two are matched. A eukaryotic cell is a cell that has a membrane nucleus and other membrane compartments or sacks, called organelles, that have specialized functions. The rest of this chapter will discuss the functions of the various organelles. The word eukaryotic means "true kernel" or "true nucleus", alluding to the presence of the membrane nucleus in these cells. The word "organelle" means "small organ", and, as already mentioned, organelles have specialized cellular functions, just as organs in your body have functions. Figure 2 A generalized eukaryotic cell showing some of the organelles. (Photo: Mediran, Wikimedia. 14 Aug 2002) Both animals and plants are eukaryote. Despite their fundamental fundamentalThere are some surprising differences between animal and plant cells. Animal cells have centrioles, centrosomes (discussed below the cytoskeleton) and lysosomes, while plant cells do not. Plant cells have a cell wall, chloroplasts, plasmodemates and plastids used for storage, and a large central vacuole, while animal cells do not have. Cell Size At 0.1 Â"5.0 Â"4m in diameter, prokaryotic cells are significantly smaller than eukaryotic cells, which have diameters ranging from 10 Â"100 Â"4m (Figure 3). The small size of prokaryotes allows the ions and organic molecules entering them to spread rapidly to other parts of the cell. Similarly, any waste produced inside a prokaryotic cell can quickly move out. However, the larger eukaryotic cells have evolved different structural adaptations to improve cellular transport. In fact, the large size of these cells would not be possible without these adaptations. In general, the size of the cells is limited because the volume increases much faster than the surface of the cells. As a cell gets bigger, it becomes increasingly difficult for the cell to acquire sufficient materials to support internal processes, as the relative size of the surface through which the materials have to be transported decreases. Figure 3 This figure shows the relative sizes of different cell types and cell components. A grown man is shown for comparison. Small sizes, in general, are needed for all cells, both prokaryotes and eukaryotes. Let's examine why. First, we will consider the area and volume of a typical cell. Not all cells are spherical in shape, but most tend to approximate a sphere. Remember that the formula for the surface area of a sphere is 4^r2, while the formula for its volume is 4^r3/3. Thus, as the radius of a cell increases, its surface area increases as the square of its radius, but its volume increases as the cube of its radius (much faster). Therefore, as the size of the cell increases, its surface-to-volume ratio decreases. The same principle would apply if the cell had the shape of a cube (Figure 4). If the cell becomes too large, the plasma membrane will not have enough surface area to support the rate of diffusion required for the volume increase. In other words, when a cell grows, it becomes less efficient. One way to become more efficient is to divide; another way is to develop organelles that perform specific tasks. These adaptations lead to the development of more sophisticated cells called eukaryotic cells. Figure 4 Volume increases faster than the surface. The area of the cell is 1mm x 1mm x 6 sides = 6mm2. The volume of the small cell is 1mm x 1mm x 1mm = 1mm3. This gives an area to the volume ratio of 6:1.The area of the largest cell is 2mm x 2mm x 6 sides = 24mm2. The volume of the large cell is 2mm x 2mm x 2mm = 8mm3.This gives an area/volume ratio of 3:1 (24:8 reduces to 3:1). References A unless notice, images on this page are licensed under cc-by 4.0 of openstax. text adapted by: openstax, biology concepts. base be be be mbri open open open open open open open open open open open open open lord anatomy external anatomy anatomy anatomy anatomy" - examines the appendices and parts of the mouth anatomy of fish anatomy â€ "color guide, fish organs and analyze the age of the fish for rings on scale observation of the fish â€" view a red live fish, take data on the respiratory rates of dissection of the natural rat "classification of the rats, skin regionsRequired report Evolution Lab - Simulator Models Mutation rates and strengths Evolution Concept Map - Graphic Organizer Evolution Crossword Puzzle - Terms relating to the topic of evolution by examining the fossil record - organize paper fossils to show change during explorations of Time through time - Explore the Berkeley Berkeley website Answer the questions Understanding homology and analogy - Even the Berkeley website, the questions understand the evolution - Arthropod story- Berkeley interactive activity with the PBS series evolution questions - watch video clips, answer the questions become human - Video clips and website information; Questions Taxonomy INTERPRETING GRAPHICS - Use a map to show groups of animals and how they are related to Dichotomous Keys (NORNS) - practice using keys, imaginary creatures D'Hotomous Keys (Aliens) - more practice using key keys classification - watch fingerprints and develop a way To classify Taxonomy Project - Students create their own kingdoms, the Kaibab lesson - another grapefruit of deer random sampling - estimates a population of "Sunflowers" interpreting ecological data - graphics and data tables ecological succession- graphic shows as a Laghetto changes, with population questions Biology (Virtual Lab) - Growth of the Paramecium Demography Lab - collect cemetery data, build the Predator Prey Simulation survival curve - Collect Food Web Label II data - Another image to identify manufacturers, consumers .. etc Biomes Concept Map - Research Biomi, Create Graphic Organizer B Iomes WebQuest - Search Biomi, Create a Mobot-Web Biomes Travel Presentation and Brochure, Search Site, Fill Table and Reply Questions Biome Map - Color N. America's Biomes Isopod Behavior Lab - AP Lab 11, Modified Environmental Issues Recycle City - Web, view the EPA website on recycling with questions The Poem Elephant - Contemplates the nature of the Martian observations and the car - Identify what makes something "alive" security lab - illustration, identify good and bad procedures the of Science â € "Prefissi and suffixes sponge animals â €" Fast workshop using capsules and water (toys) to collect data on how fast water animals grow in living beings â € "investigate how much water is stored in the grass cutouts Microscope Â «andÂ» Lab â € â € "Use a microscope to examine the letter Â« andâ »Virtual Lab microscope â €" for students who lose Â «andÂ» Lab labeling â € "Image, no lab lab lab (advanced) Â € "For AP Biology Microscope Coloring - Very simple worksheet on the parts Observation â €" Opening workshop, using the senses Pendulum project â € "Based inquiry, experimental design and data analysis (physical science) Penny Lab â €" Lead An experiment on the surface tension Production of carbon dioxide â € "Determine how the activity changes the amount of CO2 expelled MAKING SLIME â €" Instructions for creating a polymer measuring the capacity Ã pulmonary â € "graphics and data collection measure a bean-based bean where students work with volume and mass, as well as common laboratory equipment Debunking The Paranormal â €" investigate a claim from a scientific point of view, capacity of Critical Thought Lab Report Template & Rubric Flower Coloring â € "Coloring parts of a flower; stands men, pistil, ovary, leaf coloring petals â € "color structures; xilema, floema, beam sheath, epidermis..etc monocot and dicot comparison â € "coloring with terms and questions waterweed simulator â €" check the quantity of light and co2 and observe the rates of botanical photosynthesis wordsearch â € "vegetable terms identification tree â € "Terminology leaf (alternative vs simple), and a key to identify the trees of the Midwest Tree Rings â €" Website on Dendrology, with questions where plants take their food â € "cultivate plants, weigh the ground and Confute that plants consume the soil plant hormones â € "Laboratory studies the effects of gibberellic acid on photosynthesis simulation growth â €" measure ATP production rates by changing the brightness and CO2 levels in the investigation of the leaf stoma Â € "Compare stomachs of plants held in light and dark Help Wanted â €" descriptions of plant works (classified), students guess the most suitable structure transpiration lab â € "measure i water loss rates in plants held in different conditions germination inhibitors â € "measure germination rates in tomatoes seed germination experiments â €" Students investigate which factors influence germination cheek cell Labination ã, -ã, Ã, observe pillow cells under the cheek cell virtual labÃ microscope, if you have lost it in Animal Cell Coloring Class, â € "Coloring A Typical Animal Cell Plant Cell Coloring, - Observing Onion Microscope and Elodea Plant Cell Lab MakeupÃ , -Ã, observation to the microscope of the onion and the elodea, if the students have the lab that day can view a site with images to complete the laboratory pantry Plant Cell Virtual Lab Â"use a virtual microscope to view plant cells. Comparison of plant and animal cells"look at the cheek cells and onion Prokaryote Coloring" â color a typical bacterial cell Cell City Analogy â compares a cell to a city Cells Alive (Internet) Ã – - use of laboratory analysis laboratory data paramecium coloring- color paramecium, vacuole, mouth pore, macronucleus, cilia. euglena coloring - color heuglena; flagella, chloroplast, film. kingdom protista concept map - organizes the types of protistas with the characteristic ameba & paramecium lip - displays both specimens, compares and draws algae lip - compares 3 types of algae: volvox, spirogyra, euglena biodiversity of ponds - water sample tin, identify the organisms (protista, artropodi..ect) protista crossword - vocabulary; vacuole, paramecium, algae, malaria..etc phylum porifera & phylum cnidaria sponge anatomy - sponge image; students label amebocytes, collar cells, ears. sponge coloring - another page of anatomy, coloring the hydra anatomy structures - moisturizing image; students label tentacles, cnidocytes, shoots. . hydra lab - anatomy and behavior of the hydra . phylum platyhelminthes & nematoda observationA Planna Mive Planian and observe the regeneration Phylum Mollum Dissection of the Squid Slow - External and internal structures, which use real squid virtual squids - Photo of online dissection for students to view, label and questions, Chart of Makeup Lab Mollusk - Compare Cefalopods , Gastroods and Bivalves Phylum Annelida Observation of an Earthworm Earthworm Earthworm Larthworm Labeling Labeling - The adventures of Herman Mollusk and Annelid Crossword Phylum Phyllum Arthrhropoda Arthropod Poetry - Short enigmas (Poems) Where students should guess the graph of Artropod Vocab Associate - Students complete A chart that outlines the characteristics of Artropod subphyla arthroprod coloring - color and labels parts, compare types Phylum Chorddata amniote egg coloring - learn egg structures; Yolk, Alantois, Amnion, Chorion Comparison of a human and avian skeleton - coloring and bones identification Bird Beaks and Feet - Look at photos of birds, make inferences on their diet and habitat animal diversity Web - Explore website, information on classes, Virtual Orders and Relationships Field Travel at San Diego Zoo - Explore the site, Question Question Zoo-Logical - A logical puzzle on dinosaurs, mainly for the fun fish temperature laboratory - investigate how the breathing rate of a fish changes With temperament; Chart Fish Temperature Makeup Laboratory - As above, online version for students not in observation of a living fish class - simple laboratory in which students observe a fish in a chart of beaker mammals - Fill out a chart on orders mammals; Write descriptions and relatives animal behavior territorial behavior territorial behavior in crickets - marks and observes the crickets as they interact with the other practical of simple genetics - using the simulation of mendelian genetics and the simulation of punnett squares - using monsters and Popsicle sticks to show how alleles are hereditary currency to compare the actual results compared to the results provided by a Punnett Square Hereditity Word - Fill the empty space, finds the terms genetic crosses with two traits - Basic Mendel Cross Croce Genetics with two traits (Hard) - Basic Mendel Cross Dihybrid Cresces in Guinea Pings (PDF) - Switch through how to perform a 4x4 square codominance Punnett and incomplete Dominance-Basic Croci-Basic Rindspa Oompa Loompa Genetics - Crosses and set of basic problems, using Oompas LOOMPAS Human Genetics Survey - Class takes a survey of human traits, like the punts The ear shaping inheritance chromosomal - use tube detergents to show how genes are inherited; Independent assortment, segregation, simulation of the Sex-Linkage connection group - use tube cleaners beads, students build chromosomes with alleles and perform crosses, preaching results (advanced) design-A-species - using the rules of inheritance (Mendel), create an organism; Dominance and recessivity, traits of multiple alleles, inheritance of codominancy and color of eyes - uses a simulation to show how multiple alleles can affect a single trait (color of eyes) Hardinistic Statesusing the HW Corn Genetics and Chi Square equation – statistical analysis, using preserved corn and counting of the kernals Corn Genetics – grow corn, albino ratio 3:1, laboratory report analyzes F1, F2 crosses Fruit Fly Genetics – virtual laboratory where to cross different flies, collect data and statistically analyze the results Fruit Fly (Drosophila) Virtual Lab – wider lab through a program created by Virtual Courseware, requires Meiosi Label – looking at cells in various stages of meiosis, identifying and ordering Meiosi Internet Lesson – looking at meiosis animations and answering DNA Coloring questions – basic image of DNA and RNA DNA Crossword – basic terms Transcription & Translation Coloring – shows the structures involved, nucleotides, basic torque rules, amino acids DNA analysis – simulate DNA recombination used by DNA Extraction – Like DNA Controls the Workings of a Cell – examine a DNA sequence, transcribe and translate DNA Sequencing into Battery – website simulates sequence of bacterial DNA, PCR techniques Who ate Cheese – simulate electrophoresis gels to solve a crime Genetic Science Learning Center – website, with Genetic Science Ethics- investigation questions as a group of ethical issues involved genetics (clonation, gene therapy..) HIV coloration – advanced, viral infection & DNA

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