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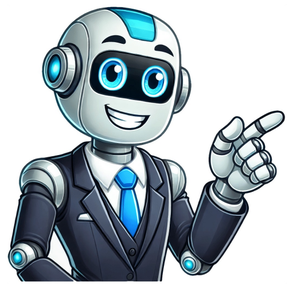

Table of Contents (click to expand)Classification Of HeterotrophsHerbivoresCarnivoresFungi Heterotrophs are organisms that cannot produce their own food through carbon fixation and depend on other sources of organic carbon to fulfill their nourishment requirements. Heterotrophs are all around usin the oceans, deserts, forests and perhaps even sitting right next to you! Technically, organisms that cannot produce their own food through carbon fixation and depend on other sources of organic carbon to fulfill their nourishment requirements are called heterotrophs. Thus, heterotrophs basically include all the animals and other organisms that cannot make their own food internally. Carbon fixation is the process of converting inorganic carbon, i.e., CO2 into an organic form, such as carbohydrates. This conversion is done through the process of photosynthesis. Organisms that can perform carbon fixation to cater their nutritional requirements all by themselves, without depending on other biological sources, are called autotrophs. Plants, trees, green algae and cyanobacteria are all examples of autotrophs. In a food chain, heterotrophs are represented by organisms from primary consumers to apex consumers. In fact, 95% ofall organisms on Earth are heterotrophs. The term heterotroph came into existence in 1946 out of the need to classify microorganisms based on their type of nutrition. Recommended Video for you:Photosynthesis: The Biochemistry Behind How Plants Make Their Food Based on the energy source, heterotrophs can be one of of two types: photoheterotrophs and chemoheterotrophs. Photoheterotrophs are the organisms that use lightto derive their energy. However, they are unable to use CO2 as their original carbon source and, therefore depend on organic compounds found in other living sources in the environment. Heliobacteria, purple non-sulphur bacteria, and green non-sulphur bacteria are some examples of heterotrophs. Chemoheterotrophs, on the other hand, extract energy by ingesting preformed organic energy sources, such as carbohydrates, proteins, lipids etc., which have been synthesized earlier by other organisms. Consumption of processed (and thus reduced) carbon compounds facilitate heterotrophs to use all the obtained energy for important biological processes, such as growth and reproduction. Now, lets look into some examples of heterotrophs. Heterotrophs that consume plants and leaves to meet their nutritional requirements are called herbivores. Herbivores make up the primary consumers in any food chain. Now,self-sustaining autotrophs process complex organic molecules (CO2) during photosynthesis and convert them into energy, in the form ofadenosine triphosphate (ATP), during cellular respiration. This ATP is often in the form of simple carbohydrates, such as glucose, as well as more complex carbohydrates, like cellulose and starch. Besides simple carbohydrates, starch is broken down by most animals. Thanks to the secretion of an enzyme called amylase from the pancreas and salivary glands, which helps in breaking down starch. However, cellulose, a major component of plant cell walls, is hard to digest for many heterotrophs. Fortunately, some herbivores have symbiotic gut florathat help them break down even cellulose into a usable form of energy. (Photo Credit: Pixabay) Cows, goat, deer and other ruminants are some of the most popular examples of herbivores. They ferment plant material in special chambers containing the aforementioned symbiotic organisms inside their stomachs. Animals that eat just fruits,such ascertain birds, bats and monkeys, are special types of herbivores called frugivores. Similarly, nectarivores are herbivores that get their nutrition from the nectar of plants, which is abundant in simple sugars. Bees, butterflies and some other moths are examples of nectarivores. An Egyptian fruitbata frugivore (Photo Credit : Arpingstone/Wikimedia Commons) Rather than dining on plants, carnivores are those heterotrophsthat prefer to eat meat. Although carnivores generally eat herbivores, certain carnivores (on higher trophic levels) may also eat other carnivores. Carnivores are often referred to as predators. (Photo Credit: Pixabay) Lipids (fats) stored in the body of an herbivore are the main energy source for carnivores. Although the supply of glycogen is limited, small proportions of glycogen (a polysaccharide of glucose) can also serve as energy storage and is generally stored in the liver and muscles of the carnivore. Wolves, lions, tigers and leopards are some popular examples of carnivores. These carnivores have sharp teeth to tear apart the flesh and access the nutrient-dense meat. Hawks, eagles and falcons are some birdsthat are carnivorous. Thanks to their accurate eyesight, they are able to detect rodents like rats to eat. Marine life also boasts plenty of carnivores. Sharks are a common examplethat come to mind when we think about ravenous fish looking to prey on other animals. Besides sharks, there are a lot of other carnivorous fish, such as the puffer, lionfish, tigerfish, eel etc. Some carnivores may be scavengers, i.e., creatures who eat dead animals, instead of directly preying on one. Scavengers play an important role in completing the food cycle and keeping the environment clean by eating the dead population. Without them, our planet would smell unbearably stinky. Opossums and vultures are two common scavengersthat youll often see eating rotten or leftover dead animals on channels like National Geographic or Animal Planet. They prefer to eat the flesh of animalsthat have died recently. One interesting fact about vultures is that their feathers and urine are built to naturally shield against the scourges of bacteria and other such microorganisms, which are plenteous on the carcasses upon which they feed. Vultures feeding on a deer carcass (Photo Credit : Mdjaveed01/Wikimedia Commons) Fungi are a special type of heterotrophthey do not directly ingest their food like other heterotrophs, but instead feed by absorption. Fungi have structures called hyphae, which are similar to plant roots. Hyphae grow and form a network through the substrate on which the fungi feeds. Hyphae secrete digestive enzymes to break down the substrate and absorb nutrients from it. Substrates for fungi include wood, cheese or sometimes even flesh. However, most of them specialize in breaking down a limited range of food items. In fact, some fungi varieties get their nutrition from only a single substrate. Interestingly, some fungi are useful for us. For example, Saccharomyces cerevisiae helps in the production of yeast, which makes it possible to make bread, cheese and beer. Some fungi are also used in medicines such as penicillin, lovastatin, cyclosporine etc. References (click to expand)Geosc 20 Homepage.Prokaryotes, Eukaryotes, & Viruses Tutorial - The Biology Project.Biller, S. J., Coe, A., Roggensack, S. E., & Chisholm, S. W. (2018, June 26). Heterotroph Interactions Alter Prochlorococcus Transcriptome Dynamics during Extended Periods of Darkness. (O. Mason, Ed.), mSystems. American Society for Microbiology. Hussain Kanchwala is an Electronic Engineer from University of Mumbai. He is a tech aficionado who loves to explicate on wide range of subjects from applied and interdisciplinary sciences like Engineering, Technology, FinTech, Pharmacy, Psychology and Economics. Related Videos Heterotroph n., plural: heterotrophs [htotof] Definition: An organism that feeds on organic matter produced by, or available in, other organisms. What is a heterotroph? Does a heterotroph make its own food? In biology and ecology, a heterotroph is an organism that does not have the ability to chemically produce (i.e. synthesize) its own food from inorganic molecules. Because of this inability, heterotroph feeds on other forms of life to derive their organic nutritional requirements. (Ref. 1) A heterotroph can also be defined based on the chemistry of the food it uses to survive. In particular, an organism is a heterotroph if it obtains its nutrition from organic compounds (i.e. complex molecules found in living things). Generally, these organic compounds are used by the heterotroph to obtain energy for their own survival. These organic compounds are used by heterotrophs to form important biomolecules, such as simple sugars, carbohydrates (i.e. complex sugars), fats (also known as lipids), proteins (which are broken down during digestion into amino acids), and nucleic acids (i.e. DNA and RNA). They incorporate these biomolecules into their body to perform all the metabolic functions necessary for survival and reproduction. Biology definition: A heterotroph is an organism that cannot make its own food; it is unable to synthesize its own organic carbon-based compounds from inorganic sources and as a result, they feed on organic matter produced by, or available in, other organisms. Etymology: from Greek hteros, meaning different + trophos, meaning feeder. Related terms: heterotrophy (noun), heterotrophic (adjective), heterotrophically (adverb). Synonym: consumer Compare: autotroph, phototroph The word heterotroph gives origin to certain words: Heterotrophy (noun) The condition of being a heterotroph is called heterotrophy. For example: A right whale, one of the largest creatures in the ocean, exhibits heterotrophy. It feeds on plankton, some of the smallest organisms in the ocean. Heterotrophism (noun) What is heterotrophism? Is it the same as heterotrophy? Heterotrophism refers to the ability of an organism for a life of heterotrophy. Heterotrophic (adjective) By definition, this term is used to describe an organism eating other organisms. For example: Some bacteria are heterotrophic meaning the heterotrophic bacteria will feed on other types of bacteria for nourishment. Heterotrophically (adverb) Feeding heterotrophically means feeding on other organisms. For example: A shark feeds heterotrophically near the Barrier Reef. It hunts fish and other marine life and is a very efficient predator. Types of Heterotrophs What are the different types of heterotrophs? Let us find out the answer to that question below. Photoheterotrophs vs. chemoheterotrophs Heterotrophs consume other organisms to get their energy to survive, that is they obtain their carbon from organic compounds. They may be classified into two major groups: (1) photoheterotrophs and (2) chemoheterotrophs. Basically, photoheterotrophs use light energy whereas chemoheterotrophs do not. Rather, the latter derive their energy from inorganic oxidation. Photoheterotrophs are heterotrophs that use energy from sunlight, but just as supplemental energy (i.e. extra energy). In fact, carbon dioxide is not their only source of energy. They use carbon from other forms of life, meaning, they feed on other organisms as well. Some examples of photoheterotrophs are found in the world of bacteria such as various forms of non-sulfur bacteria, and heliobacteria. There are also insects, in particular aphids, and a type of wasp (the Oriental Hornet or Vespa orientalis) that are also able to use the energy of the sun as a supplement to their regular food. Chemoheterotrophs, such as humans and other animals, are the more classic heterotrophs. They get their energy from chemicals that they acquire by eating other forms of life exclusively. Organotrophs vs. lithotrophs Another way of grouping heterotrophs is by the type of compounds they use as electron sources. Organotrophs, in particular, are heterotrophs that use reduced carbon compounds, e.g. carbohydrates, fats, and proteins. In contrast, lithotrophs are heterotrophs that use inorganic compounds (e.g. ammonium, nitrite, or sulfur) as electron sources. Chemoorganoheterotrophs Chemoorganoheterotrophs are heterotrophs characterized by the following features: Organic carbon (e.g. glucose) is used as a carbon source Organic compounds (e.g. carbohydrates, proteins, and lipids) are used as an electron source Many heterotrophs fall under this particular type of heterotroph. Heterotrophs vs. Autotrophs What is the difference between autotrophs and heterotrophs? In essence, autotrophs are organisms capable of making nutritive organic molecules from inorganic materials. Thus, they differ from heterotrophs in having the capability of producing their own food and need not consume other organisms for sustenance. They can produce complex organic compounds from inorganic substances generally in two ways, i.e. by photosynthesis or by chemosynthesis. Heterotrophs lack this capability and therefore have to feed on other organisms. Examples of autotrophs are land plants, lichens, photosynthetic algae (e.g. chlorophytes, charophytes, dinoflagellates, and diatoms), and photosynthetic bacteria (e.g. cyanobacteria). These organisms employ photosynthesis in producing organic compounds from inorganic sources. They are referred to specifically as photoautotrophs. Another group of autotrophs is the chemoautotrophs. This group consists of autotrophs that use chemical energy in producing complex organic compounds. Examples include methanogens, halophiles, nitrifiers, thermoacidophiles, and sulfur oxidizers. For further comparison between heterotrophs and autotrophs, see this table below: Heterotrophs Autotrophs Definition: Organisms that are unable to synthesize their own organic carbon-based compounds from inorganic sources, hence, have to feed on organic matter produced by, or available in, other organisms Definition: Organisms capable of making nutritive organic molecules from inorganic materials Consumers in the Ecological Pyramid Producers in the Ecological Pyramid Types: Photoheterotrophs and Chemoheterotrophs Types: Photoautotrophs and Chemoautotrophs Examples:humans, animals, fungi, various protists, and some bacteria Examples: plants, photosynthetic algae, photosynthetic bacteria, methanogens,halophiles, nitrifiers, thermoacidophiles, and sulfur oxidizers The Role of Heterotrophs in the Ecosystem Why are heterotrophs important to the ecosystem? Heterotrophs are the consumers in the foodchain or food web, meaning they consume other forms of life. They are not capable of producing their own food, unlike the producers. Heterotrophs are found at all levels of the food chain in a particular environment, and each level plays a critical role in the ecology of that environment. Some heterotrophs are primary consumers and are also known as herbivores. They eat the autotrophic plants and/or other organisms capable of manufacturing their own food, such as phytoplankton and photosynthetic bacteria. Some examples of herbivores or primary consumers are a deer in a forest, an elephant in an African savannah, a manatee on a seagrass bed in Florida, a snail in a tropical forest, or a sea snail on a coral reef. Some heterotrophs are secondary consumers and are also known as carnivores, or meat-eaters because they eat other heterotrophs. Examples of secondary consumers are a wolf in a forest eating a deer, a pride of lions in an African savannah eating an elephant, a shark eating a manatee in the Florida Keys, a salamander, and a toad, both eating snails in the rainforest, or a Giant Triton (a giant marine snail) eating other sea snails on a coral reef. These are secondary consumers when they eat primary consumers. Some secondary consumers can also be tertiary consumers or top predators, meaning they can eat both primary consumers and other secondary consumers such as themselves. Examples of top predators are wolves, which not only can eat deer but can also eat a fox (a carnivore itself), for example. Lions and leopards in the African savannah can also eat crocodiles, or lizards, or other carnivores. A shark can eat fish, some of which are themselves carnivores. Orcas are a top predator in the ocean, and they can eat sharks as well as fish. An eagle or a hawk are examples of top predators in the bird world. A Crown-of-Thorn sea star is a top predator on a coral reef. Humans are top predators as well. Some heterotrophs are omnivores and eat both primary producers and other heterotrophs like themselves. Are all animals heterotrophs? We can say that all animals are heterotrophs but the type varies depending on what they preferably eat. Most herbivores only eat plants and other photosynthetic autotrophs and never eat other animals. Some can be both primary consumers and secondary consumers. Think of a bear, for example. Bears can eat fruits and vegetables, but can also eat other animals. Humans are the same. Are humans heterotrophs? Humans are heterotrophs and many of us are omnivores. We eat a variety of plants and animals. By eating other organisms in the food chain, heterotrophs recycle nutrients and organic chemicals and put them to good use in their body, or defecate and, therefore, help seeds of a variety of plants germinate and spread to other areas of an ecosystem. Some plant seeds need to pass through the digestive system of a heterotroph, or consumer, to germinate (this process is called scarification, and it is the process that weakens the coat of the seed so that the plant embryo can emerge). Heterotrophs also fertilize the land and/or the water with their feces. Consumers or predators are very important ecologically because they keep the populations of their prey within reasonable numbers. For example, a review of research studies by Ballard et al. (2001) suggested that coyotes, mountain lions, and wolves play a major role in determining the size of deer populations in the United States. A classic thirty-year study in Isle Royale, Michigan (Page 1990) clearly showed how predators (wolves in this case) and prey (moose) interact. The size of a wolf pack is determined by how many moose are available in a particular area. If the moose population increases, then the size of the wolf pack can increase and vice-versa. Also, predators tend to eat older and weaker individuals or the ones that are less able to survive and, by doing so, keep the population of their prey healthier. In many places where predators have been hunted and eliminated, ecosystems are unhealthy. For example, in the United States, deer populations have exploded in many areas because wolves, coyotes, and other natural predators have disappeared. This causes overpopulation, which results in overgrazing (i.e. eating too much vegetation) creating erosion and barren landscapes. Too many individuals in a population are more prone to spread diseases as unhealthy individuals are not eliminated by a predator. Heterotroph Examples What is an example of a heterotroph? And which kind of organism is a heterotroph? All non-autotrophic are heterotrophs. They are exemplified by animals, fungi, various protists, and some bacteria. Therefore, heterotrophs can be multicellular (i.e. made of many cells) or unicellular (i.e. made of only one cell). We already cited various animals that play a role as heterotrophs in an ecosystem. Refer to the previous section for specific examples of animals as heterotrophs: The Role of Heterotrophs in the Ecosystem. Are fungi autotrophs or heterotrophs? Fungi are heterotrophic. These organisms are plant-like in having cell walls but they lack chlorophyll (green pigment essential in photosynthesis). Coprinaceae or inky cap mushrooms Protists (Kingdom Protista) that are heterotrophs include protozoans, certain nonphotosynthetic algae, water molds, and slime molds. There is such a variety of these Protists that entire books have been dedicated to describing them and many existing species have probably not yet been discovered (Ref. 2). Ameoba is just one of them. Watch the video below to see how an amoeba catches and eats its prey, paramecia (a ciliate protozoan). Many bacteria are heterotrophs. Examples are Escherichia coli, commonly found in feces, and many bacteria on our skin, in water bodies, and in a variety of other habitats. An interesting group of bacteria is the microbe-eating microbes. These bacteria eat other bacteria. Below is a video of a bacterium (Bdellovibrio) that attacks and feeds on another bacterium (E. coli). Carnivorous plants, such as the Venus flytrap, are not a full-time heterotroph. They may be consuming organisms for nutrition but they are still capable of photosynthesis. Thus, we can say that they are facultatively heterotrophic, meaning they are not wholly heterotrophic and may still survive through a photosynthetic mode of life and grow, albeit relatively slower when not resorting to heterotrophy. Venus fly trap with trapped insect Try to answer the quiz below to check what you have learned so far about heterotrophs. References 1. Sutton, J. (1998). Heterotrophic Nutrition. In Biology (pp. 349-362). Palgrave, London. 2. Patterson, D. J., & Lee, W. J. (2000). Geographic distribution and diversity of free-living heterotrophic flagellates (pp. 269-287). London, UK: Taylor & Francis Press. 3. Ballard, W. B., Lutz, D., Keegan, T. W., Carpenter, L. H., & deVos Jr, J. C. (2001). Deer-predator relationships: a review of recent North American studies with emphasis on mule and black-tailed deer. Wildlife Society Bulletin, 99-115. 4. Page, R. E. (1990). The inverted pyramid: ecosystem dynamics of wolves and moose on Isle Roya BiologyOnline.com. Content provided and moderated by BiologyOnline Editors. Autotrophs are organisms that can produce their own food from the substances available in their surroundings using light (photosynthesis) or chemical energy (chemosynthesis). Heterotrophs cannot synthesize their own food and rely on other organisms both plants and animals for nutrition. Technically, the definition is that autotrophs obtain carbon from inorganic sources like carbon dioxide (CO2) while heterotrophs get their reduced carbon from other organisms. Autotrophs are usually plants; they are also called "self feeders" or "primary producers". Autotroph versus Heterotroph comparison chart AutotrophHeterotrophProduce own food Yes No Food chain level Primary Secondary and tertiary Types Photoautotroph, Chemoautotroph Photoheterotroph, Chemoheterotroph Examples Plants, algae, and some bacteria Herbivores, omnivores, and carnivores Definition An organism that is able to form nutritional organic substances from simple inorganic substances such as carbon dioxide. Heterotrophs cannot produce organic compounds from inorganic sources and therefore rely on consuming other organisms in the food chain. What or How they eat ? Produce their own food for energy. They eat other organisms to get proteins and energy. Monotropastrum humile, a myco-heterotroph dependent on fungi throughout its lifetime Autotrophs produce their own energy by one of the following two methods: Photosynthesis - Photoautotrophs use energy from sun to convert water from the soil and carbon dioxide from the air into glucose. Glucose provides energy to plants and is used to make cellulose which is used to build cell walls. E.g. Plants, algae, phytoplankton and some bacteria. Carnivorous plants like pitcher plant use photosynthesis for energy production but depend on other organisms for other nutrients like nitrogen, potassium and phosphorous. Hence, these plants are basically autotrophs. Chemosynthesis - Chemoautotrophs use energy from chemical reactions to make food. The chemical reactions are usually between hydrogen sulfide/methane with oxygen. Carbon dioxide is the main source of carbon for Chemoautotrophs. E.g. Bacteria found inside active volcano, hydrothermal vents in sea floor, hot water springs. Heterotrophs survive by feeding on organic matter produced by or available in other organisms. There are two types of heterotrophs: Photoheterotroph These heterotrophs use light for energy but cannot use carbon dioxide as their carbon source. They get their carbon from compounds such as carbohydrates, fatty acids and alcohol. E.g. purple non-sulfur bacteria, green-non sulfur bacteria and heliobacteria. Chemoheterotroph Heterotrophs that get their energy by oxidation of preformed organic compounds, i.e. by eating other organisms either dead or alive. E.g. animals, fungi, bacteria and almost all pathogens.Type of organismEnergy sourceCarbon sourcePhotoautotrophLightCarbon dioxideChemoautotrophChemicalsCarbon dioxidePhotoheterotrophLightCarbon from other organismsChemoheterotrophOther organismsOther organisms A flowchart explaining the various types of trophsFood ChainAutotrophs do not depend on other organism for their food. They are the primary producer and are placed first in the food chain. Heterotrophs that depend on autotrophs and other heterotrophs for their energy level are placed next on the food chain.Herbivores that feed on autotrophs are placed in the second trophic level. Carnivores that eat meat and omnivores that eat all types of organisms are placed next in the trophic level. Food cycle between autotrophs and heterotrophsReferences Wikipedia: Autotroph Wikipedia: Chemoheterotroph Wikipedia: Heterotroph Share this comparison via: If you read this far, you should follow us: "Autotroph vs Heterotroph." Diffen.com. Diffen LLC, n.d. Web. 14 Jul 2025. < > In the world of biology, organisms are often classified based on how they obtain energy and nutrients. One such classification centers around heterotrophic organisms, which are unable to produce their own food. From the tiniest bacteria to complex animals, heterotrophs rely on external sources to fuel their metabolic needs.This article by thedailyECO delves into what it means to be a heterotrophic organism, examining their defining features, modes of nutrition, and varied examples across ecosystems.You may also be interested in: The Structure of FungiContents Heterotrophs are organisms that get their nutrients and energy by consuming other organisms. In other words, they cannot produce their own organic matter from inorganic substances like autotrophs, which produce their own food through photosynthesis or chemosynthesis. Instead, they rely on taking organic carbon from other living beings.Heterotrophs use these organic compounds as their energy source, breaking them down through cellular respiration to produce ATP, the universal energy currency of cells. This reliance on external food sources is what gives heterotrophs their name, which comes from the Greek words "heteros" meaning "other" and "trophos" meaning "feeder."Heterotrophs can be further classified into primary consumers (herbivores), secondary consumers (carnivores), and decomposers. Primary consumers feed directly on autotrophs, secondary consumers prey on primary consumers, and decomposers break down dead organic matter.Importance of heterotrophs in ecosystemsHeterotrophs are indispensable for the efficient transfer of energy between trophic levels within food chains and webs. Also, by consuming and decomposing organic matter, heterotrophs contribute to the recycling of nutrients in ecosystems.Heterotrophs also help regulate populations of other organisms. Predators, for example, control the number of prey species, preventing overpopulation and maintaining ecological balance.As mentioned earlier, heterotrophic organisms rely on organic carbon sources for food, as they can't convert inorganic carbon into organic carbon like autotrophs can. There are two main types of heterotrophy: photoheterotrophy and chemoheterotrophy.Photoheterotrophy: photoheterotrophs use light for energy but can't rely solely on carbon dioxide for carbon. They also consume organic compounds from their surroundings. This unique metabolic strategy allows them to thrive in environments with limited organic carbon. Examples include certain purple and green bacteria, as well as some algae. Chemoheterotrophy: chemoheterotrophs obtain energy by consuming organic sources like lipids, carbohydrates, and proteins, which are broken down in chemical reactions to release energy. This is the most common mode of nutrition among organisms. Examples include humans, dogs, cats, and all other animals.Interestingly, some organisms can switch between autotrophic and heterotrophic modes of nutrition depending on environmental conditions. This is known as mixotrophy. Examples include Euglena, a genus of single cell flagellate eukaryotes and certain bacteria.Perhaps, the most known example of mixotrophy are carnivorous plants, which primarily obtain energy through photosynthesis, but they supplement their nutrient intake by capturing and digesting insects or other small animals.Heterotrophic organisms exhibit several defining characteristics that distinguish them from autotrophic organisms:Heterotrophs rely on organic carbon from other organisms, as they cannot produce it from inorganic sources.They act as consumers, feeding on plants, animals, fungi, or other organic material.Their diet is varied, and depending on the species they can consume plants, animals, and even dead or decaying material. Heterotrophs often depend on nutrients synthesized by other organisms, such as vitamins and essential amino acids.The range of species is also varied and includes animals, fungi, many bacteria, and certain archaea. This diversity allows heterotrophs to fill numerous ecological niches. Due to their inability to produce their own food, heterotrophs occupy higher trophic levels in food chains and food webs.Understanding heterotrophs is just the beginning. Discover the broader world of nutritional strategies in our related article.Autotrophs and heterotrophs are the two main categories of organisms based on how they obtain energy and nutrients. Their primary difference lies in how they source the energy and organic compounds needed for survival.Autotrophs, or self-feeders, are capable of producing their own food. They do this by converting inorganic materials, like carbon dioxide and water, into organic compounds, mainly through photosynthesis or chemosynthesis. These processes allow autotrophs to create glucose and other necessary nutrients from non-living sources. Common autotrophs include plants, algae, and certain bacteria like cyanobacteria.Heterotrophs, or other-feeders, cannot produce their own food and depend on consuming other organisms for energy and organic compounds. They break down these compounds for energy, relying directly or indirectly on autotrophs for their nutrition.In other words, the main distinction is that autotrophs can produce organic compounds from inorganic sources, while heterotrophs must consume other organisms to obtain these compounds.This difference in nutritional strategy defines their roles in ecosystems: autotrophs supply organic material and oxygen to the environment, while heterotrophs maintain population balance and contribute to nutrient recycling.Heterotrophic organisms include herbivores, carnivores, omnivores, and fungi, among others. Let us take a closer look: Herbivores:Herbivores are primary consumers that feed on plants. Examples include cows (Bos primigenius taurus), rabbits (Oryctolagus cuniculus), and camels (Camelus dromedarius).Many herbivores have symbiotic organisms in their digestive systems to help break down cellulose from plant walls into usable energy. Some herbivores are frugivorous, like bonobos (Pan paniscus) and fruit flies (Drosophila melanogaster), or nectarivorous, like hummingbirds (Colibri sp.) and honeybees (Apis mellifera).Carnivores:Carnivores are typically secondary or tertiary consumers. Secondary consumers, like the eagle owl (Bubo bubo), feed on primary consumers.Tertiary consumers, like lions (Panthera leo) and great white sharks (Carcharodon carcharias), feed on both primary and secondary consumers. Carnivores get energy mainly from lipids stored in herbivores. Some, like vultures (Aegypius monachus), are scavengers that feed on dead animals.Omnivores:Omnivores consume both plants and animals. Humans (Homo sapiens sapiens) and brown bears (Ursus arctos) are examples.Fungi:Fungi are also heterotrophs. They use a hyphal system to absorb nutrients, often from decaying organic matter. Some fungi are parasitic, like Fistulina hepatica, while others, like Nyctalis agaricoides, are saprophytic, feeding on dead or decomposing material. Fungi play a crucial role in ecosystems by recycling nutrients.Did you know that heterotrophic organisms are essential for the survival of all life on Earth? Learn more about these fascinating creatures and their vital functions in the video below.If you want to read similar articles to What Is the Meaning of Heterotrophic Organisms?, we recommend you visit our Biology category. Home Biology Heterotrophs are organisms that do not produce their food and depend on other organisms for their food and energy. Heterotrophs are a group of organisms that are distinct from autotrophs that prepare their own food as well as provide food to the heterotrophs.The term heterotroph is composed of two words; hetero meaning others and troph meaning food, indicating that these organisms depend on other organisms for food.Heterotrophs are also called consumers in the ecosystem as these consume food prepared by autotrophs and form the higher trophic levels in the food chain.Unlike autotrophs, heterotrophs do not have systems for the reduction of carbon sources. These organisms take up the complex biomolecules from the producers and break them down into simpler components with the help of different enzymes.Heterotrophs obtain the reduced organic compounds from autotrophs and oxidize them to produce energy.Even though most heterotrophs depend on autotrophs for energy as well as food, there are some heterotrophs that acquire energy from solar energy or chemical reactions.Heterotrophs are important in the ecosystem as these make up a lot of biomass and are responsible for the transfer of energy and biomass through the food chain.Heterotrophs can be classified as different groups of consumers as primary, secondary, and tertiary consumers. Heterotrophs also make up the decomposers in the food chain that feed on the dead and decaying biomass in the environment.Different groups of heterotrophs have different complexities and systems that enable them to acquire energy and food from autotrophs. Heterotrophs. Created with BioRender.com Photoheterotrophs or heterotrophic phototrophs are a group of living beings that derive their energy from solar energy but depend on autotrophs for food.These heterotrophs cannot utilize carbon dioxide as a carbon source and require other organic compounds. These are also known as holozoic organisms.These photoheterotrophs utilize systems like electron transport chains or direct proton pumping in order to generate an electrochemical gradient to provide molecular energy.Photoheterotrophs can generate ATPs through phosphorylation, but they depend on organic compounds for growth and biomolecules.Photoheterotrophy is an important lifestyle for organisms living in areas where growth and survival are limited by the availability of energy-rich niches.Most commonly, photoheterotrophs occur in surface water with large populations of living beings. The ability to utilize solar energy to produce energy decreases their dependency on respiration.Some of the examples of photoheterotrophs include Heliorestis baculata, H. convulata, and Synechococcus elongatus. Chemoheterotrophs are heterotrophs that obtain their energy from chemical compounds and consume food produced by autotrophs.Unlike phototrophs, chemotrophs cannot utilize solar energy and depend on energy obtained from reduced carbon compounds by the process of respiration.A particular group of chemoheterotrophs can derive energy from inorganic chemical substances; however, they still require organic compounds to build their biomass and form biomolecules.Chemoheterotrophs are the larger group of heterotrophs which includes organisms from all domains.Chemoheterotrophs are essential for the normal functioning of an ecosystem as these organisms take up organic materials from plants and other autotrophs and cycle them through the food web. Organotrophs are heterotrophs that utilize organic compounds for energy as well as food.These organisms derive energy from the oxidation of organic compounds via internal respiration.In organotrophs, the organic compound acts as the source of an electron, which then passes through the electron transport chain to produce ATPs.Organotrophs include all animals and some bacteria. The organotrophic bacteria can be aerobic or anaerobic. Lithotrophs are heterotrophs that utilize inorganic compounds or geological processes as their source of electrons.The most common inorganic compounds that are used as electron sources include elemental sulfur and elemental gases.Most lithotrophs are smaller bacteria as the inorganic compounds do not produce enough energy, like in the case of larger organic sugars.These can oxidize electron donors to produce electrons that are then channeled into electron respiratory channels to form ATP.The only known lithotropic organisms are unicellular organisms; however, multicellular organisms might obtain energy from symbioses with the unicellular organisms.Most lithotrophs are found in areas like sea floors or underground water sources where chemical food sources are found. Fungi are a group of eukaryotes that depend on dead and decaying matter for their food as well as energy.Fungi are organoheterotrophic organisms that use complex organic compounds as their electron source.Fungi make up the decomposers in the food chain, where they consume dead and decaying organisms and release simpler molecules so that those can be utilized by the autotrophs.These are mostly found in dry and arid environments, and these occur in the soil where most dead and decaying components are located.There is a large number of fungal species that can be aerobic or anaerobic, and depending on the availability of oxygen, these produce different levels of energy from organic compounds. Photoheterotrophic cyanobacteria are a group of microorganisms that have superior photosynthetic efficiency and minimum growth requirements.These bacteria cannot use carbon dioxide as a source of carbon, but they can use solar energy for the transfer of electrons in the electron transport chain.The bacteria occur in aquatic or damp environments where they feed on the organic compounds produced by autotrophic aquatic organisms.These are increasingly studied due to their ability to produce a large amount of energy in the presence of sunlight. Iron-reducing bacteria are bacteria that metabolize reduced iron to oxidized iron compounds to produce energy.The energy obtained from the process is then utilized for absorption of carbon source and metabolism.These bacteria have been proposed to be used for decontamination of metal or metalloid polluted environments.Even though iron-reducing organisms are associated with extreme environments, these can occur in other areas as well.The occurrence of these bacteria in extreme environments is due to the occurrence of the inorganic compounds in such environments. Animals make up the most important group of heterotrophs in the environment as these occupy the maximum number of trophic levels in the food chain.All animals are heterotrophic, but their dependency on the autotrophs might differ as some depend on autotrophs while others are indirectly dependent.Herbivorous animals feed on autotrophic organisms like plants and phytoplanktons to obtain both energy as well as food.Carnivores, in turn, feed on herbivores, indicating an indirect dependency on the autotrophs.The organic compounds are taken up by the organisms, which are then broken down into simpler molecules by different mechanisms. Heterotrophs are the largest group of living organisms in the food chain, occupying multiple trophic levels.The second trophic level is occupied by consumers that directly feed on autotrophs so as to begin the transfer of energy in the system.The heterotrophs on the third trophic levels are secondary consumers that feed on primary consumers. These are the more complex group of organisms that feed on organic compounds.Decomposers are another important group of organisms residing at the higher trophic levels in the ecosystem. These are an essential group of heterotrophs that feed on dead and decaying materials to release the inorganic compounds back to the environment.Each trophic level transfers 10% of the energy while the rest of the energy is stored in the trophic level as biomass. Created with BioRender.com Important Viva Questions on Heterotrophs What are Heterotrophs?Define Heterotrophs.What are the types of Heterotrophs?Write 4 examples of Heterotrophs.Where are Heterotrophs in the Food Chain? Singh, Vipin & Singh, Asha & Singh, Rishikesh & Kumar, Ajay. (2018). Iron oxidizing bacteria: insights on diversity, mechanism of iron oxidation and role in the management of metal pollution. Environmental Sustainability. 1. 10.1007/s42398-018-0024-0.Emerson D, Fleming EJ, McBeth JM. 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