Distinguish between natural selection and artificial selection. brainly

Free help with homework free help with homework Why join brainly? ask questions about the task to get an explanation I want a free account closed, pollination as defined by positioning or transferring pollen from the anther to the stigma of the same flower or another flower. In gymnosperms, pollination involves pollen transfer from the male cone to the female cone. When passing the pollen germination to the pollen tube and sperm fertilization of the egg. Pollination has been well studied since Gregor Mendel's time. Mendel successfully carried out self-pollination as well as cross-pollination of garden peas while studying how characteristics pass from one generation to another. Today's plants are the result of plant breeding, which uses artificial selection to produce today's varieties. An example of this is today's corn, which is the result of years of breeding that began with its an an an an ante, teosinte. The teosinte that the ancient Maya originally began growing was tiny seeds-vastly different from today's relatively huge corn ears. Interestingly, although these two plants seem to be completely different, the genetic difference between them is tiny. Pollination has two forms: self-pollination and cross pollination. Self pollination occurs when pollen in the anther is deposited in the stigma of the same flower or another flower on the same plant. Cross pollination is the transmission of pollen from one flower to the stigma of another flower in another part of the same species. Self-pollination occurs in flowers where the stamen and carpel mature at the same time and are positioned in such a way that pollen can land on the stigma of the flower. This method of pollination does not require investment in the plant to make nectar and pollen as food pollinating. Explore this interactive website to review self-pollination and cross-pollination. Living species are designed to ensure the survival of their offspring; those who do not die out. Therefore, genetic diversity is needed so that changing environmental or stress conditions, some offspring can persist. Self-pollination leads to the production of plants with less genetic diversity, as they drink genetic material from the same plant and are eventually used to form the igoton. Cross-pollination, on the other hand, or crossing, leads to greater genetic diversity, as microgametophyte and megagametophyte come from different plants. Since cross pollination allows for more genetic diversity, plants have been developed in many ways to avoid self-pollination. Some species of pollen and ovaries mature at different times. These flowers make self-pollination almost impossible. By the time the pollen matures and has shed, the stigma of this flower is ripe and can only be pollinating pollen another flower. Some flowers have developed physical characteristics that prevent self-pollination. 2000 is such a flower. 2 types of flowers with an anther and stigmatization length difference: pin-eyed flower places anthers in the pollen tube halfway, and the stigma of thrum-eyed flower is also located halfway. Insects easily cross-pollination while searching for nectar at the bottom of the pollen tube. This phenomenon is also called heterostically. Many plants, such as cucumbers, male and female flowers are found in different parts of the plant, making self-pollination difficult. In even other species, the male and female flowers are borne by different plants (double-living). These are all barriers to self-pollination; therefore, the plants depend on pollinating over pollen. The majority of pollinating agents are biotic agents, such as insects (such as bees, flies and butterflies), bats, birds and other animals. Other plant species are pollinating abiotic agents such as wind and water. Contributes! Did you have any idea how to improve your content? We want the input. On this page, you can read more, a non-technical overview of the subject of biological evolution This article is a non-technical introduction to the subject. For the main encyclopedia article, see Evolution. From the fifth edition of Ernst Haeckel's The Evolution of Man (London, 1910). The evolutionary history of species has been described as a tree, with many branches derived from a single strain. Part of a series of evolutionary biologyDarwin finches John Gould Key Themes Introduction to Evolution Common Descent Evidence Processes and Results Population Genetics Variation Variation Mutation Natural Selection Adaptation Polymorphism Genetic Drift Gene Flow Speciation Adaptive Radiation Co-operation Coevolution Co Extinction Out Extinction Divergence Divergence Parallel Evolution Extinction Natural history Life origin History of life History of evolution History of evolution History of evolution Life Story Life Story LifeTime Evolutionary History Oestronomic Classification Evolutionary taxonomic cladistic Transitional fossil extinction event History of the evolutionary theory review The Darwin Darwin Origin of Race Before Synthesis Modern Synthesis Molecular Evolution Evo-devo Current Research The History of Natural History (Timeline) Fields of Evolution and Applications of Biosocial Criminology Ecological Genetics Evolutionary Aesthetics Evolutionary Anthropology Evolutionary calculation Evolutionary economics Evolutionary epistheology Evolutionary ethics Evolutionary theory Evolutionary linguistics Evolutionary medicine Evolutionary neuroscience Evolutionary physiology Evolutionary psychology Experimental evolutionary phylogeny Physiology Selective breeding Neutering Sociobiology Systematic Universal Darwinism Social Consequences Evolution as Fact and Theory Social Effects Creation-Evolution Debate Objections Evolutionary Support Level Support Evolutionary Biology Portal category related to topicsvte Evolution is the process of change in life of all forms over generations, and evolutionary biology is the study of how evolution happens. Biological populations develop through genetic changes that correspond to changes in observable characteristics of organisms. Genetic changes include mutations caused by damage or replication errors in the DNA of organisms. As the genetic variation of the population drifts randomly over generations, natural selection gradually results in traits that will be more or less common based on the relative reproductive success of organisms with these properties. The earth's age is about 4.5 billion years. [1] [2] [3] The earliest indisputable evidence of Life on Earth stretches to at least 3.5 billion years ago. [4] [5] [6] Evolution does not attempt to explain the origin of life (instead it covers it with abiogenesis), but it does explain how early life forms evolved into the complex ecosystem we see today. [7] Based on the similarity of today's organisms, all life on Earth is derived from one last universal an an anena, from which all known species differed during the evolutionary process. [8] All the material is hereditary in the form of genes from his parents, which are passed on to the offspring. The offspring have differences in genes due to the introduction of new genes through random changes called mutations or through reshuffling of existing genes during sexual reproduction. [9] [10] The offspring differ from the parent in smaller random articles. If these differences are useful, the offspring are more likely to survive and reproduce. This means that more offspring in the next generation will make a useful difference, and individuals will not have an equal chance of reproductive success. In this way, in descendant populations, properties that result in organisms being more adapted to their living conditions become more common. [9] [10] These differences accumulate, resulting in changes in the population. This process is responsible for many different life forms around the world. A modern understanding of evolution began with the 1859 release of Charles Darwin's Book On the Origin of Species. In addition, Gregor Mendel's work with plants helped explain the hereditary patterns of genetics. [11] Paleontology fossils, population genetic development, and a global network of scientific research provided further details on the mechanisms of evolution. Scientists are now well aware of the origin of new species (speciation) and have observed process in the laboratory and in the wild. Evolution evolution the main scientific theory that biologists use to understand life and is used in many disciplines, including medicine, psychology, conservation biology, anthropology, forensics, agriculture and other socio-cultural applications. Simple overview The main ideas of evolution can be summarised as follows: Life forms multiply and therefore tend to grow more. Factors such as predators and competition work against the survival of individuals. Each offspring differs from the parent(s) in a smaller, random way. If these differences are beneficial, the offspring are more likely to survive and reproduce. This makes it likely that more offspring in the next generation will have beneficial differences and fewer damaging differences. These differences accumulate over generations, resulting in changes within the population. Over time, populations can be divided or branched into new species. These processes, collectively known as evolution, are responsible for the many different life forms seen in the world. Natural selection Charles Darwin proposed the theory of evolution of natural selection. Read more: Natural selection In the 19th century, the European expansion and naval expeditions employed naturalists, while curators of large museums presented surviving and living specimens of life breeds. Charles Darwin was an English graduate and studied and studied natural sciences. Such natural historians would collect, catalog, describe and study a vast collection of specimens stored and managed by the curators of such museums. Darwin served aboard HMS Beagle as a naturalist on the ship, who was assigned to a five-year research expedition around the world. During his journey, he observed and collected a lot of organisms, and was very interested in the different life forms of the South American coast and the neighboring Galapagos Islands. [12] Darwin noted that orchids have complex adaptations to ensure pollination, all of which come from basic flower parts. Darwin gained extensive experience collecting and studying the natural history of life forms from distant places. During his studies, he formulated the idea that all species evolved from an an an anenthras with similar characteristics. In 1838, he described how a process he called natural selection would accomplish this. [14] The size of the population depends on how many and how many resources can support it. In order for the population to remain the same size year after year, a balance or balance is needed between the size of the population and the resources available. Because organisms produce more offspring than their environment can support, not all of them can survive from every generation. It has to be a competitive fight resources to help them survive. As a result, Darwin recognized that it is not a coincidence alone to set survival. Instead, the survival of an organism depends on differences in individual organisms or properties that help or hinder survival and reproduction. Well-adapted ones are likely to leave more offspring than their less adaptable competitors. Traits that prevent survival and reproduction would disappear for generations. Properties that help an organism survive and multiply accumulate over generations. Darwin recognized that individuals' unequal ability to survive and reproduce could cause gradual changes in the population, and used the term natural selection to describe this process. [15] Observations of changes in animals and plants formed the basis of the theory of natural selection. For example, Darwin noted that orchids and insects are closely related, allowing plants to be pollinating. He noted that orchids have different structures that attract insects, so the pollen of flowers sticks to the body of insects. In this way, insects transport pollen from a man to a female orchid. Despite the intricate appearance of orchids, these special parts are made from the same basic structures that form other flowers. In his book The Fertilization of Orchids (1862), Darwin suggested that orchid flowers be adapted from existing parts through natural selection. [17] Darwin was still researching and experimenting with his ideas for natural selection when he received a letter from Alfred Russell Wallace, in which he described a theory very similar to his own. This led to the immediate joint publication of both theories. Wallace and Darwin both saw the story of life as a family tree, with all branches of the tree's limbs common an an an anatis. The mountains of the limbs represented modern species, and the branches represented common an an an anenses, which are divided among many different species. To explain these relationships, Darwin said that all living things are connected, and that meant that all life must come from a few forms, or even from a single common an anater. He called this process an amendment. [16] Darwin published his theory of evolution in 1859 in the journal Origin of Species. [18] His theory means that all life, including mankind, is the result of continuous natural processes. The assumption that every life on Earth has a common an an an anathesis has been met with protests from some religious groups. Their objections contrast with the support of more than 99 percent of members of today's scientific community. [19] Natural selection is usually compared to its most well-ed survival, but this term derives from Herbert Spencer's biology principles of 1864, five years after Charles published his original works. The most suitable survival describes the process of natural selection because natural selection isn't just about survival, and it's not always the fitst that it survives. [20] Darwin's source of natural selection theory laid the ground for modern theory of evolution, and his experiments and observations showed that organisms in populations were different, that some of these variations were inherited, and that these differences were natural selection. However, he could not explain the source of these variants. Like many of his predecessors, Darwin mistakenly believed that hereditary properties were the product of use and unused use, and that the characteristics acquired in the life of the body could be passed on to his offspring. He was looking for examples such as large ground feeding birds that get stronger legs through exercise, and weaker wings from flying until, like the ostrich, they could not fly at all. [21] This misunderstanding was called the legacy of the acquired characters and was part of the theory of species transfer, put forward by Jean-Baptiste Lamarck in 1809. In the late 19th century, this theory became known as Lamarckism. Darwin created a failed theory called pangenesis to try to explain how acquired properties can be inherited. In the 1880s, Weismann's experiments in August showed that usage and out-of-use changes could not be inherited, and Lamarckism gradually fell out of favor. [22] Gregor Mendel's pioneering genetics work provided the missing information that could help explain how new features can move from parent to offspring. Mendel's experiments with several generations of pea plants have demonstrated that inheritance works by separating and passing on hereditary information during the formation of the cells of the genus and by re-ifying that information during fertilization. It's like mixing different hands of the card, one body getting a random mix of half the cards from one parent, and half the cards from the other. Mendel called the information factors information factors; however, they later became known as genes. Genes are an essential unit of mindlessness in living organisms. They contain information that controls the physical development and behavior of organisms. Genes are made from DNA. Dna is a long molecule that consists of molecules called nucleotides. Genes are like short instructions made up of the letters of dna alphabets. Together, the whole set of these genes gives enough information to serve as a user manual about how to build and run an organization. The instructions written out in this DNA alphabet can be changed, the mutations, and this can change the instructions carried out by the genes. Genes within the cell which are packets for carrying DNA. It is the reshuffling of chromosomes that results in a unique combination of genes for offspring. As genes interact with each other as the body evolves, a new combination of genes produced by sexual reproduction can increase the genetic variability of the population even without new mutations. [23] The genetic variability of the population may also increase if the members of the population intersect with each other, causing gene flow between populations. This can introduce genes that were not previously present into the population. [24] Evolution is not a random process. Although mutations in DNA are random, natural selection is not a process of chance: the environment determines the likelihood of reproductive success. Evolution is an inevitable consequence of imperfect copying, self-reproducing organisms that multiply for billions of years under selective pressure from the environment. The outcome of evolution is not a perfectly designed organism. The final products of natural selection are organisms that adapt to their current environment. Natural selection does not make progress towards the ultimate goal. Evolution does not seek more advanced, intelligent, or sophisticated life forms. [25] For example, fleas (wingless parasites) are descended from a winged, ancient scorpion fly, and snakes are lizards that no longer need limbs— although pythons still grow small structures that are remnants of their ancestor's hind legs. [26] [27] Organisms are merely the result of successful or unsuccessful variants depending on the environmental conditions at the time. Rapid environmental changes typically cause extinction. [28] 99.9 percent of all species on Earth are now extinct. [29] Since the beginning of life on Earth, five major mass extinctions have led to species diversity. The most recent chalk-paleogenic extinction event occurred 66 million years ago. [30] Genetic drift More information: Genetic drift Genetic drift is caused by allelic frequency changes within populations of a species. Alleals are different variants of specific genes. They determine things like hair color, skin tone, eye color and blood type; in other words, all the genetic traits that vary in individuals. Genetic drift does not introduce new alleals into the population, but can reduce intra-population deviations by removing an alleal from the genome. Genetic drift is caused by random sampling of alleals. A truly random sample is a sample in which no external force influences the selection. It's like pulling balls of the same size and weight, but different colors in a brown paper bag. In each offspring, the alleals present are samples of the alleals of previous generations, and random play a role in the individual survives reproduction and pass on the sample from the generation to the next. The allelic frequency of the population is the proportion of specimens of a given allelic, which are of the same shape as the total number of allelics present in the population. [31] Genetic shifts have a greater impact on smaller populations than larger populations. [32] Hardy-Weinberg principle The Hardy-Weinberg principle states that in certain idealised conditions, including the lack of selection pressure, the large population will not change in the frequency of allele as generations pass. [33] The hardy-weinberg balanced population corresponding to these conditions is in balance with Hardy-Weinberg. Hardy and Weinberg in particular have shown that dominant and recessive alleils do not automatically become less and less frequent, as previously thought. The conditions for the Hardy-Weinberg balance include that there can be no mutations, immigration or emigration, all of which can directly alter alleal frequencies. Furthermore, mating should be completely random, with all males (or females in some cases) equally desirable companions. This ensures true random mixing of allei. [34] The Hardy-Weinberg balanced population is similar to the deck of cards; No matter how many times the deck is shuffled, no new cards are added and no old ones have been taken away. Cards in the deck represent allelia in the population's genome. In practice, no population can be perfect in hardy-weinberg balance. The finate size of the population, combined with natural selection and many other influences, cause changes in allelelic frequencies over time. Population narrow cross-section The population bottleneck model shows how alleals can be lost Population bottlenecks occur when the population of a species is drastically reduced in a short period of time due to external forces. [35] In the real bottleneck of the population, the decrease is not conducive to any combination of alleals; it is completely random chance which individuals survive. Bottlenecks can reduce or eliminate genetic variation from the population. Further drift events following bottlenecks can also reduce the genetic diversity of the population. The lack of diversity can also put the population under other selective pressures. [36] A common example of population bottlenecks is the northern elephant seal. In the 19th century, due to excessive hunting, the population of the northern elephant seal decreased to 30 species or less. They have made a full recovery, with the total number of individuals around 100,000 and increasing. However, the effects of the bottleneck can be seen. Seals are more likely to have serious problems with disease or genetic disorders because there is almost no diversity in the population. [37] Founding Influence The founding prayer, the small populations contain allere frequencies other than the parent population. The founding effect occurs when a small group separates from a population and forms a new population, often through geographical isolation. The allelic frequency of this new population is likely to be different from that of the original population and changes the frequency of certain allelics in the population. The founders of the population will determine the genetic makeup, and potentially the survival of the new population for generations. [34] One example of the founding influence is the Migration of the Amish to Pennsylvania in 1744. Two founders of the Pennsylvania colony carried Ellis-van Creveld syndrome. Since the Amish tend to be religious isolates, they intersect, and the frequency of generations of this practice in Ellis-van Creveld syndrome in Amish people is much higher than the frequency among the population. [38] Modern synthesis Additional information: Modern synthesis (20th century) Modern evolutionary synthesis is based on the concept that populations of organisms have significant genetic variations caused by mutation and recombination of genes during sexual reproduction. It defines evolution as a change in allelelic frequencies in a population caused by genetic shifts, gene flow between subpopulations, and natural selection. Natural selection is emphasized as the most important mechanism of evolution; large changes are the result of a gradual accumulation of small changes over a long period of time. [39] Modern evolutionary synthesis is the result of a merger of several different scientific areas to create a more cohesive understanding of evolutionary theory. In the 1920s, Ronald Fisher, J.B.S. Haldane and Sewall Wright combined Darwinian natural selection theory with statistical models of Mendel genetics, establishing discipline in population genetics. In the 1930s and 1940s, efforts were made to unify population genetics, to monitor field naturalists on the distribution of species and subspecies, and to analyze the fossil record into a uniform explanatory model. [41] The application of the principles of genetics to naturally occurring populations by scientists such as Theodosius Dobzhansky and Ernst Mayr preceded an understanding of evolutionary processes. Dobzhansky's 1937 work genetics and the origin of species helped bridge the gap between genetics and field biology by showing the mathematical work of population geneticists in a form more useful to field biologists and showing that wild populations are much more geneticly volatile with geographically isolated subspecies and reservoirs of genetic diversity in recessive genes than models of early population geneticists. Mayr, understanding genes and direct the introduction of evolutionary processes from field research into the concept of biological species, defined as a group of interseding or potentially interseding populations that are reproductively isolated from all other populations. Dobzhansky and Mayr both stressed the importance of attaching subspecies isolated by geographical barriers when new species appear. Paleontologist George Gaylord Simpson helped incorporate paleontology with statistical analysis of the fossil record, which showed a pattern consistent with the branched and undirected pathway of organism evolution predicted by modern synthesis. [39] Evidence of evolution During hms beagle's second voyage, naturalist Charles Darwin collected fossils in South America and found pieces of armor thought to be giant versions of the scales of the nearby modern armadillo. Upon his return, anatomist Richard Owen showed him that the fragments came from gigantic, extinct glyptodones linked to the armadillo. It was one of the distribution patterns that helped Darwin develop his theory. [14] Additional information: Evidence of common origin for evolution Scientific evidence of evolution comes from many aspects of biology and contains fossils, homologous structures, and molecular similarities between species' DNA. Fossil record Research in the field of paleontology, studying fossils, supports the idea that all living beings are related to each other. The fossils prove that the changes accumulated over a long period of time in organisms have led to the different life forms we see today. The fossil itself reveals the structure of the organism and the relationships between current and extinct species, allowing paleontologists to build a family tree for all life forms on Earth. [42] Modern theology began with the work of Georges Cuvier. Cuvier noted that in the sediment rock, each layer contained a certain group of fossils. The deeper layers he suggested for older contained simpler life forms. He noted that many forms of life from the past are no longer present today. One of Cuvier's successful contributions to understanding the fossil record was to establish extinction as a fact. Cuvier suggested the idea of revolutions or catastropheism to explain the extinction, in which he believed that geological disasters had occurred in earth's history and many species had been wiped out. [43] Cuvier's revolutionary theory was later replaced by uniform theories, especially those of James Hutton and Charles Lyell, who suggested that geological changes on Earth should be gradual and consistent. [44] However, the current evidence in the fossil record supports the As a result, the general idea of catastrophism has been re-emerged as a valid hypothesis in at least a few changes in life forms in fossil records. A lot of fossils have been discovered and identified. These fossils serve as chronological records of evolution. The fossil record sets an example of transitional species that present ancient correlations between past and present life forms. [45] One of these temporary fossils is Archaeopteryx, an ancient organism with different characteristics of the reptile (such as long bony tails and conical teeth), but also bird characteristics (such as feathers and a wishbone). Such an find reveals that modern reptiles and birds come from a common an an an an anx. [46] Comparative anatomy Additional information: Convergent evolution and divergent evolution Comparing similarities between organisms from their bodies or the appearance of parts, called morphology, has long been a way to group life into closely related groups. This can be achieved by comparing the structure of adult organizations of different species or by comparing patterns of cell growth, division and migration during the development of the organism. Taxonomic taxonomy is the branch of biology that names and classizes all living things. Scientists use morphological and genetic similarities to help them categorize life forms based on ancient relationships. For example, orangutans, gorillas, chimpanzees, and humans all belong to the same taxonomic group known as the family — in this case, the hominidae family. These animals are grouped because of the similarities of morphology, which originate from common an anatomies (so-called homology). [47] The bat's mammalian forearm bones are designed for flight. Strong evidence of evolution is the analysis of homologous structures: structures of different species that no longer perform the same task but have a similar structure. [48] This is the case with the fore legs of mammals. The fore legs of a human, cat, whale and bat have a strikingly similar bone structure. However, the fore legs of each of the four species perform different tasks. The same bones that build the wings of a bat, which are used for flying, also build whale finges, which are used for swimming. Such a design does not make much sense if they are independent and are individually built for their specific tasks. Evolutionary theory explains these homologous structures: it has all four animal-like anores, and it has fallen through each generation. These structural changes have aligned the fore legs with different tasks. [49] Bird and bat wings are examples of convergent evolution. However, anatomical comparisons can be misleading, as not all anatomical similarities indicate a close relationship. Organisms living in similar environments often have similar this process is called convergent evolution. Called. sharks and dolphins have similar body shapes, yet they are distantly related – sharks are fish and dolphins are mammals. Such similarities are the result of both populations being subjected to the same selective pressure. In both groups, changes to promote swimming were favourable. Thus, over time, a similar appearance (morphology) was developed, even if they are not closely related. [50] Embryology In some cases, an anatomical comparison of embryo structures of two or more species proves a common anorr, which may not be evident in adult form. As the embryo develops, these homologies can be lost to view, and structures can take on different functions. The classification of the vertebrate group (which includes humans) is based on the presence of the tail (which extends beyond the anus) and pharynbrate. Both structures appear at certain stages of embryonic development, but are not always evident in the adult form. [51] Due to the morphological similarities present in embryos of different species, it was once assumed that organisms would recreate their evolutionary history as embryos. It was thought that human embryos passed through an ax, followed by a reptile stage before completing their development as mammals. This replay, often referred to as summary theory, is not supported by scientific evidence. What happens, however, is that the first stages of development are similar in broad groups of organisms. [52] In the very early stages, for example, all vertebrates look remarkably similar, but they are not very similar to any ancient species. As development continues, specific characteristics emerge from the basic sample. Homology from vestigious structures includes a unique group called vestigious structures. Vestigiful refers to anatomical parts that are minimal, if any, valuable to the organization that owns them. These seemingly illogical structures are remnants of organs that played an important role in ancient forms. This is the case with whales having small vestigiful bones that appear to be remnants of the foot bones of their ancestors, which were associated with land. [53] Humans also have vestigial structures, including ear muscles, wisdom teeth, appendix, tailbone, body hair (including goose bumps) and crescent moon fold in the corner of the eye. [54] Biogeography Four species of Galápagos finch produced by an adaptive radiation that diversified their beaks to different food sources, biogeography is an examination of the geographical distribution of the species. Evidence from biogeography, in particular evidence from the biogeography of oceanic islands, played a key role in convincing Darwin and Alfred Russel Wallace that species are common developed with a branching pattern. [55] The islands often contain endemic species, species that are not found anywhere else, are often associated with species on the nearest continent. Furthermore, the islands often contain clusters of closely related species that have very different ecological niches that have different ways to make a living in the environment. Such clusters are formed through the process of adaptive radiation, where a single ancient species colonizes an island with many open ecological niches, then diversifies and evolves into different species adapted to fill empty niches. Well-studied examples include Darwin finches, a group of 13 finch species endemic to the Galapagos Islands, and Hawaiian honeycreepers, a group of birds that once, before extinction caused humans, numbered 60 species by completing various ecological roles, each descended from a single finch as an ancestor of the Hawaiian Islands about 4 million years ago. [56] Another example is the Silversword Association, a group of perennial plant species that are also native to the Hawaiian Islands and live in different habitats and are available in different shapes and sizes, including trees, shrubs, and soil-hugging pots, but which can be hybridized with each other and certain tarweed species located on the west coast of North America; It seems that one of these tarweeds has colonized Hawaii in the past and has given rise to the entire Silversword alliance. [57] Molecular Biology Part of DNA All living organism (except RNA viruses) contains DNA molecules that carry genetic information. Genes are those parts of DNA that carry this information and affect the properties of an organism. Genes determine the general appearance of the individual and, to some extent, his behavior. If two organisms are closely linked, their DNA will be very similar. [58] On the other hand, the more distantly related two organisms are, the greater the difference. For example, siblings are closely related and have very similar DNA, while cousins have a more distant relationship and there are many more differences in their DNA. Similarities in DNA are used to determine interracial relationships, in the same way that relationships between individuals are shown. For example, a comparison between chimpanzees and gorillas and humans shows that there is a 96 percent similarity between the DNA of humans and chimpanzees. A comparison of DNA shows that humans and chimpanzees are more closely related than any species to gorillas. [59] [60] [61] Molecular systematicity is due to the measurement of similarities between such molecules and the use of this information to find out how different types of organisms are related during evolution. These comparisons allowed biologists to build relationships The evolution of life on Earth. [62] They even allowed scientists to decipher the relationships between organisms. Relationships. the common an an an an an anates lived so long ago that there remained no real similarities in the appearance of organisms. Artificial selection The results of artificial selection: the Chihuahua mixture and the Great Danish artificial selection are controlled breeding of pets and animals. Humans determine which animal or plant reproduces and which offspring survives; thus determining which genes will be passed on to future generations. The process of artificial selection has had a significant impact on the development of pets. For example, people have produced different types of dogs by control breeding. The differences in size between chihuahua and Danish Danish are the result of artificial selection. Despite their dramatically different physical appearance, they and all other dogs developed from some wolves domesticated by humans in what is now China less than 15,000 years ago. [63] Artificial selection has created a wide variety of plants. In the case of maize (maize), recent genetic evidence suggests that domestication occurred 10,000 years ago in central Mexico. [64] [unreliable source?] Before domestication, the edible part of the wild form was small and difficult to collect. Today the Corn Genetic Collaboration • Stock Center maintains a collection of more than 10,000 genetic variations on corn that arose from random mutations and chromosome variations of the original wild type. [65] In artificial selection, the new breed or variety has random mutations that appeal to humans, while in natural selection it is the surviving species whose random mutations are useful to it in the non-human environment. In both natural and artificial selection, variations are the result of random mutations, and the underlying genetic processes are essentially the same. [66] Darwin carefully observed the results of artificial selection of animals and plants in support of natural selection. [67] Much of his book on the origin of species was based on observations of many types of domestic pigeons derived from artificial selection. Darwin suggested that if people could make dramatic changes to pets in a short period of time, natural selection, given that millions of years will be able to make the differences seen in living things today. Coevolution Main Article: Coevolution coevolution is a process in which two or more species influence each other's development. All organizations are influenced by the life around them; however, during cocentralisation, there is evidence that the genetically determined characteristics of each species result directly from the interaction between the two organisations. [58] The documented case of coevolution is the relationship between Pseudomyrmex, a kind of ant and acacia, a plant that the ant uses as food and shelter. The connection the two are so intimate that they have led to the development of special structures and behaviors in both organizations. The ant protects the acacia against herbivores and clears the forest floor of the seeds of competing plants. In response, the plant developed swollen thorns, which are used by ants as shelters and special parts of flowers that ants eat. [68] Such co-development does not mean that ants and trees choose to behave in altruistic ways. Rather, the entire population of small genetic changes in both ant and tree benefited from each. The benefit gave us a slightly better chance that the characteristic ta- Over time, successive mutations created the relationship we're observing today. Speciation Main Article: Speciation There are several species of perches that demonstrate dramatic variations in morphology. Given the right conditions and sufficient time, evolution leads to the formation of new species. Scientists have struggled to find an accurate and all-encompassing definition of species. Ernst Mayr has determined a species as a population or group of populations whose members are able to breed naturally with each other to create viable, fertile offspring. (Members of a species are not able to create viable, fertile offspring with members of other species). [69] Mayr's definition has become widely accepted by biologists, but does not apply to organisms such as bacteria that multiply asexually. Speciation is a lineage event that results in two separate species forming a single common ancient population. [15] The widely accepted method of specification is called allopatric speciation. Allopatric speciation begins when the population becomes geographically separated. [48] Geological processes such as the appearance of mountain ranges, canyon formation, or flooding of land bridges due to sea level changes can result in separate populations. For the specificity to occur, the separation must be significant in order for the genetic exchange between the two populations to be completely disrupted. In their separate environments, genetically isolated groups follow their own unique evolutionary path. Each group accumulates different mutations, as well as being exposed to different selective pressures. Accumulated genetic changes may result in separate populations that cannot reproduce when reunited. [15] Barriers to intersecting or presitation (prevention of mating and fertilisation) or post-synthesized (barriers after fertilisation). If cross-crossing is no longer possible, they are considered to be different species. [70] The result of four billion years of evolution is the diversity of life around us, with an estimated 1.75 million different species today. [71] [72] The speciation process tends to be slow, turning over a very long period of time. rare within human lifespan. However, speciation has been observed in today's organisms, and previous speciation events have been recorded in fossils. [73] [74] Scientists have documented the formation of five new species of cichlid fish from a single common an anomaly isolated from the mother population of Lake Nagubago less than 5,000 years ago. [76] The evidence of the specificity in this case was morphology (physical appearance) and lack of natural intersertation. These fish have complex mating rituals and different discoloration; slight modifications introduced in the new species changed the pair selection process and the resulting five forms could not be persuaded to cross. [77] Mechanism The theory of evolution is widely accepted among the scientific community, which connects different fields of biology. [19] Evolution provides the field of biology with a solid scientific base. The theory of evolution is summed up by Theodosius Dobzhansky in a way that makes no sense in biology except in the light of evolution. [78] [79] However, evolution theory is not static. Within the scientific community, there is much debate about the mechanisms that do not stop behind the evolutionary process. For example, the rate of evolution is still under discussion. In addition, there are conflicting opinions as to which is the primary unit of evolutionary change — the body or the gene. The scale of change darwin and his contemporaries saw evolution as a slow and gradual process. Evolutionary trees are based on the idea that deep differences between species are the result of many small changes that accumulate over a long period of time. The gradualism was in the works of geologists James Hutton and Charles Lyell. Hutton's opinion suggests that profound geological change was the cumulative result of the relatively slow continuous operation of processes, which still works today, as opposed to catastropheism, which fostered the idea that sudden changes have causes that are no longer visible in the workplace. His unified aristars have adopted a perspective on biological change. Such a view seems to contradict the fossil record, which often shows that new species appear suddenly and then remain in this form for a long time. In the 1970s, paleontologists Niles Eldredge and Stephen Jay Gould developed a theoretical model that suggests that evolution, although a slow process from a human point of view, undergoes relatively rapid changes (between 50,000 and 100,000 years)[80] alternating with long relative stability periods. Their theory is called exact balance and an explanation of the fossil record without contradicting Darwin's ideas. [81] The unit of change is Richard Dawkins The common unit of selection in evolution is the organization. The natural occurs when the improves or decreases with a hereditary characteristic, and reproductive success is measured by the number of surviving offspring of the individual. The opinion of the organization has been questioned by many biologists and philosophers. Richard Dawkins suggests that we can gain a lot of insight by looking at evolution from the perspective of the gene; that is, natural selection acts as an evolutionary mechanism of genes and organisms. [82] In his 1976 book, The Selfish Gene, he explains: Individuals are not stable things, but fleeting. Chromosomes are also mixed into forgetting, as are the cards shortly after they are distributed. But the cards themselves survive the husking. The cards are genes. The genes are not destroyed crossing, only change partners and march. Of course they're marching on. This is their business. They're the replicators, and we're their survival machines. Once we've accomplished our goal, they'll throw us aside. But genes are the inhabitants of geological time: genes are forever. [83] Others see selection on several levels, not just at a single level of the body or gene; For example, Stephen Jay Gould asked for a hierarchical perspective on selection. [84] See also biology portal Evolutionary Biology portal Science portal Abiogenesis Creation-evolution debate Evidence of common ancestry Evolution as fact and theory support evolution misconceptions evolution references ^ Age of the Earth. United States Geological Survey. July 9, 2007 (Accessed 2015-05-29. ^ Dalrymple 2001, 205-221 ^ Manhesa, Gérard; Allègre, Claude J.; Dupréa, Bernard; Hamelin, Bruno (May 1980). Lead isotope study of basic-ultrabasic layered complexes: speculations about the age of the earth and its primitive mantle characteristics. Earth and planetary science letters. 47 (3): 370–382. 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