

Chapter 1 : Encyclopedia of Horses by Debby Sly

*The Encyclopedia of the Horse [Elwyn Hartley Edwards] on calendrierdelascience.com *FREE* shipping on qualifying offers. Examines the history of the horse from prehistoric times to early domestication, discusses the development of breeds in various regions of the world.*

Early horses[change change source] A group of horses The evolution of horses has been well studied. Of the earliest fossil horse, the North American one is called Eohippus , and the Eurasian one is called Hyracotherium. Both were small animals: Eohippus was the larger of the two at twice the size of a terrier dog. From a small forest -dweller eating nuts and fruit to a larger forest browser eating leaves and small branches. Finally, the modern horse is a grazer on open grassland , with different teeth, legs for running and much larger size. Major changes happened in the mid- Miocene when the climate became cooler, and grassland began to replace forests. This change continued, and several groups of mammals changed from browsers to grazers. Cavalry horses were used in war until the middle 20th century. Some people keep horses as pets. They are used for riding and transport. Today, horses are mostly used for entertainment and sports. They are also still used for work and transportation in some places. Horses are used in equestrianism , which is equine sports such as cross-country, showjumping, dressage, horse polo , rodeo events etc. Showjumping, cross-country and dressage are Olympic sports. Other uses of horses[change change source] Horsehide is a tough leather made from the skin of horses. Horsehair is used to make a stiff fabric. Horsehair can also be used as a stuffing for furniture. Horsehair can be mixed with plaster to make it strong. Horse bones can be used to make gelatin for food. The bones can also be used to make glue. Animal glue is still preferred by some wood workers. They are used in big cities to help police watch and protect people in crowds. Other female equines are also sometimes called mare s. Before her third birthday, she is called a filly. When a mare wants to mate, she is called in heat. This part of the estrous cycle lasts for about three weeks.

Chapter 2 : The Encyclopedia of Horses & Ponies by Tamsin Pickeral

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The wild ass, which when domesticated is usually called a donkey, was first domesticated in Egypt about 4000 years ago. General features In prehistoric times the wild horse was probably first hunted for food. Research suggests that domestication had taken place by approximately 5,000 years ago. It is supposed that the horse was first used by a tribe of Indo-European origin that lived in the steppes north of the chain of mountains adjacent to the Black and Caspian seas. Influenced by climate, food, and humans, the horse rapidly acquired its present form. Cave painting of a bull and a horse; in Lascaux Grotto, near Montignac, France. Hans Hinz, Basel The relationship of the horse to humans has been unique. The horse is a partner and friend. It has plowed fields and brought in the harvest, hauled goods and conveyed passengers, followed game and tracked cattle, and carried combatants into battle and adventurers to unknown lands. It has provided recreation in the form of jousts, tournaments, carousels, and the sport of riding. The influence of the horse is expressed in the English language in such terms as chivalry and cavalier, which connote honour, respect, good manners, and straightforwardness. A team of Clydesdales pulling a plow at a draft horse demonstration. Many early human cultures were centred on possession of the horse. Greek mythology created the Centaur, the most obvious symbol of the oneness of horse and rider. Kings, generals, and statesmen, of necessity, had to be horsemen. The names of famous horses are inseparably linked to those of their famous riders: Courtesy of the Victoria and Albert Museum, London The horse in life has served its master in travels, wars, and labours and in death has provided many commodities. Long before their domestication, horses were hunted by primitive tribes for their flesh, and horsemeat is still consumed by people in parts of Europe and in Iceland and is the basis of many pet foods. Horse bones and cartilage are used to make glue. Tetanus antitoxin is obtained from the blood serum of horses previously inoculated with tetanus toxoid. From horsehide a number of articles are manufactured, including fine shoes and belts. Stylish fur coats are made of the sleek coats of foals. Horsehair has wide use in upholstery, mattresses, and stiff lining for coats and suits; high-quality horsehair, usually white, is employed for violin bows. Horse manure, which today provides the basis for cultivation of mushrooms, was used by the Scythians for fuel. Form and function A mature male horse is called a stallion, the female a mare. A stallion used for breeding is known as a stud. A castrated stallion is commonly called a gelding. Formerly, stallions were employed as riding horses, while mares were kept for breeding purposes only. Recently, however, geldings generally have replaced stallions as riding horses. Young horses are known as foals; male foals are called colts and females fillies. Domestic horses gone wild, such as the mustangs of western North America, tend to revert to those primitive features under random mating: The rounded skull houses a large and complex brain, well developed in those areas that direct muscle coordination. While the horse is intelligent among subhuman animals, it is safe to say that the horse is more concerned with the functioning of its acute sensory reception and its musculature than with mental processes. But this ability is remarkable enough in its own right, for the cues are often given unconsciously by the human trainer, and detection of such subtle signals requires extremely sharp perception. The horse, like other grazing herbivores, has typical adaptations for plant eating: Young horses have milk or baby teeth, which they begin to shed at about age two and a half. The permanent teeth, numbering 36 to 40, are completely developed by age four to five years. In the stallion these teeth are arranged as follows on the upper and lower jaws: Teeth of a horse. Under domestication the horse has diversified into three major types, based on size and build: Domestic horses tend to be nearsighted, less hardy than their ancestors, and often high-strung, especially Thoroughbreds, where intensive breeding has been focused upon speed to the exclusion of other qualities. The stomach is relatively small, and, since much vegetation must be ingested to maintain vital processes, foraging is almost constant under natural conditions. Domestic animals are fed several at least three times a day in quantities governed by the exertion of the horse. Senses The extremely large eyes placed far back on the elongated head admirably suit the horse for its chief mode of defense: Its long neck and high-set eyes, which register a much wider range than do the eyes of a

human being, enable the horse to discern a possible threat even while eating low grasses. While visual acuity is high, the eyes do not have variable focus, and objects at different distances register only on different areas of the retina, which requires tilting movements of the head. The senses of smell and hearing seem to be keener than in human beings. As the biologist George Gaylord Simpson put it in *Horses* Legs for running and eyes for warning have enabled horses to survive through the ages, although subject to constant attack by flesh eaters that liked nothing better than horse for supper. Colour and pattern From the dun of the primitive horse has sprung a variety of colours and patterns, some highly variable and difficult to distinguish. Among the most important colours are black, bay, chestnut and sorrel, palomino, cream, and white. The black colour is a true black, although a white face marking blaze and white ankles stockings may occur. The brown horse is almost black but has lighter areas around the muzzle, eyes, and legs. Bay refers to several shades of brown, from red-brown and tan to sandy. Bay horses have a black mane, tail, and usually stockings. There is a dilution or lightening gene called silver or silver dapple that mainly influences the dark colours of the coat. Lighter shades of chestnut are called sorrel. The palomino horse runs from cream to bronze, with a flaxen or silvery mane and tail. The cream is a diluted sorrel, or very pale yellow, nearly white. White in horses is variable, ranging from aging grays to albinos with blue eyes and pink skin and to pseudoalbinos with a buff mane or with brown eyes. The chief patterns of the white horse are gray, roan, pinto, sabino, and appaloosa. Gray horses are born dark brown or black and develop white hairs as they age, becoming almost all white in advanced years. Roan refers to white mixed with other colours at birth: The pinto is almost any spotted pattern of white and another colour; other names, such as paint, calico, piebald, skewbald, overo, and tobiano, refer to subtle distinctions in type of colour or pattern. Appaloosa leopard complex is another extremely variable pattern, but the term generally refers to a large white patch over the hips and loin, with scattered irregular dark spots. Morgan stallion with bay coat. Scientists believe that it is very likely that these horses also carried the dun dilution gene. The leopard Appaloosa mutation was also discovered, which was found to be consistent with some cave paintings dating to 25,000 years ago that depict spotted horses. Mutations for chestnut, tobiano, and sabino were also observed and were dated to 3,000 years ago, whereas the buckskin variant had emerged by about 1,000 years ago. Most of the variation in coat colour appeared after domestication occurred and was likely the result of artificial selection by humans. Pinto Pinto with tobiano pattern. For stabled horses, the diet generally consists of hay and grain. The animal should not be fed immediately before or after work, to avoid digestive problems. Fresh water is important, especially when the horse is shedding its winter coat, but the animal should never be watered when it is overheated after working. Oats provide the greatest nutritional value and are given especially to foals. Older horses, whose teeth are worn down, or those with digestive troubles, can be provided with crushed oats. Chaff minced straw can be added to the oat ration of animals that eat greedily or do not chew the grain properly. Crushed barley is sometimes substituted in part for oats. Mash is bran mixed with water and with various invigorating additions or medications. It may be given to horses with digestive troubles or deficient eating habits. Corn maize is used as a fattening cereal, but it makes the horse sweat easily. Salt is needed by the horse at all times and especially when shedding. Bread, carrots, and sugar are tidbits often used by the rider or trainer to reward an animal. In times of poverty, horses have adapted to all sorts of food potatoes, beans, green leaves, and in Iceland even fish but such foods are not generally taken if other fare is available. A number of commercial feed mixes are available to modern breeders and owners; these mixes contain minerals, vitamins, and other nutrients and are designed to provide a balanced diet when supplemented with hay. Foals, which stand on their feet a short while after birth and are able to follow their mothers within a few hours, even at this early stage in life exhibit the traits generally ascribed to horses. They have a tendency to flee danger. They express fear sometimes by showing panic and sometimes by immobility. Horses rarely attack and do so either when flight is impossible or when driven to assault a person who has treated them brutally. Habit governs a large number of their reactions. Instinct, together with a fine sense of smell and hearing, enables them to sense water, fire, even distant danger. An extremely well-developed sense of direction permits the horse to find its way back to its stables even at night or after a prolonged absence. The visual memory of the horse prompts it to shy repeatedly from an object or place where it had earlier experienced fear. When teaching, the instructor always uses the same words and the

same tone of voice for a given desired reaction. While instinct is an unconscious reaction more or less present in all individuals of the same species, the degree of its expression varies according to the individual and its development. Cunning animals have been known to employ their intelligence and physical skill to a determined end, such as opening the latch of a stall or the lid of a chest of oats. Reproduction and development The onset of adult sex characteristics generally begins at the age of 16 to 18 months. The horse is considered mature, depending on the breed, at approximately three years and adult at five. Fecundity varies according to the breed and may last beyond age 20 with Thoroughbreds and to 12 or 15 with other horses. The gestation period is 11 months; days is the minimum in which the foal can be born with expectation to live.

Chapter 3 : Evolution of the horse - Wikipedia

Horses played a critical role in Philadelphia's growth and development as an industrial city, but over time their role as prime movers gradually diminished, and after the mid-twentieth century their role was primarily recreational.

The courageous and beautiful horse was domesticated in Asia over 5,000 years ago in the area now occupied by the country of Kazakhstan. They were most likely originally kept for their meat, but skeletal remains from 3,000 B.C. But consider that 5,000 years ago the horse was a herbivorous, nomadic, herd animal, no doubt preyed upon by large predators such as wolves. Specifically designed for flight, not fight, the horse has large eyes that can pick up the movement of a predator in a degree field of vision, and powerful legs and hearts to power them away from whatever should pursue them. This is the primary instinctual behavior, so vital for the very survival of the horse, yet in domestication, they somehow completely suppress these basic drives. While "courageous" may not be the first word that comes to mind when contemplating the horse, consider what Nelson Mandela once said, that courage was not the absence of fear, but the triumph over it. Try to imagine the history of mankind without the horse. Romans with no chariots, cowboys with no broncos, knights with no chargers, the cavalry arriving on foot. No other animal has so changed the course of human history, and through domestication, we have changed the horse. There are over 100 breeds of horses in the world today, from the beautiful little Fallabella, only 32 inches tall, to the massive Shire, which can be 10 feet tall at the top of the head. But size is really the only great variable. Unlike domestic dogs, and to a lesser extent domestic cats, domestic horses do not display much variety in coat type, body shape or skull structure. There are approximately 60 million horses in the world today, most still being used in some capacity that is not unlike their original jobs pulling small carts for business or transportation in hundreds of villages and towns. They are employed as police horses as well, patrolling crowded cities and busy events, enforcing crowd control and diffusing riots. They have been trained to race, jump, and even herd other animals. And they are kept as pets and companions by millions. There is an entire vocabulary devoted to the domestic horse. A hand is a unit of measurement initially equal to the width of the palm, that today equals 4 inches. So a typical horse stands about 15 hands 3 inches, or A pony is a horse that is under 48 inches tall. The body is covered with short fur, and there is a long mane of hair growing down the crest of the neck, as well as very long hair growing from an otherwise relatively short tail. The nostrils are large and flexible, and the well-developed lips are somewhat prehensile, able to select individual kernels of grain with precision. The ears are big, pointed and expressive. They can swivel in any direction, can be laid flat back against the neck when angry or agitated, and can be allowed to flop when relaxed or acting silly. Horses have large hearts and impressive lung capacity and are one of the fastest land animals in the world, able to reach speeds of over 40 miles an hour - remember, by the way, that top speeds recorded are of racehorses that have a human being and a saddle on their back weighing over 1,000 pounds. The Przewalski horse is a true wild horse that has never been domesticated. Other horses considered to be "wild", like the mustang, are actually feral horses descended from once domesticated stock. The lifestyle of the mustang, however, probably best represents how domesticated horses live in nature. They live either in bachelor herds, or herds of mares and foals, escorted by one, and occasionally two stallions. The majority of decisions as far as when to rest, visit the watering hole, move to a different pasture, etc. They are extremely social creatures who are nomadic in habit, moving constantly in search of fertile grassland. They spend time in close contact with each other, often draping their necks over one another, or resting their muzzles on each other. They may stand or walk with shoulders or hips touching, groom and nuzzle each other, and engage in a variety of soft vocalizations. Horses communicate with very subtle body language, and actually have very expressive faces showing emotion and mood through ear position, nostrils flaring, lip pursing and even the angle of their eyebrows. They pick up all these tiny gestures with ease, and their ability to understand so many signals, has made them remarkably trainable. Horses can pick up signals from humans on the ground, and on their backs that elicit complex actions. The horse is designed for life out on open grasslands. As they graze with their heads down, they can see degrees around them, from between their legs, and are always poised to flee, sometimes at the slightest detected movement. They can even sleep standing up, ready to run.

The first is a family group composed of a stallion, several mares, and their offspring. Young females will often remain with their family, while young males will be driven out of the herd by the stallion as they reach maturity, usually at between 2 and 4 years of age. The second group type is the bachelor herd, which is a group of males that are either too young, too old or not bold enough to establish their own herd. And the third and least common group is a mix of juveniles under 4 years old. Mares have a distinct hierarchy, and their relationships may remain stable for many years, as stallions come and go, battling each other for the right to escort the herd. The female is pregnant for about a year and gives birth to a single baby, called a foal. Twins are extremely rare. The newborn horse can stand within minutes, and can run in less than half an hour. They are weaned at about 8 months. If the foal in question is a thoroughbred racehorse, training begins right away, and the horses you see on the racetrack may be as young as 2 years old. The horses that compete for the Kentucky Derby and the Triple Crown are only 3 years old, and a horse that is still racing at 8 years old is a rarity. When you see the amazing white Lipizzan stallions perform, they are all at least 12 years old, for two reasons. First, they are actually born solid black and takes them about 10 years to slowly turn snow white, and second, it takes them that long to master all the incredible balletic movements they are famous for.. The brain power of the mighty pony is legendary. Ponies are far more likely to pick a lock, raid the grain bin or lead the herd on a flower bed raid than their full size horse cousins, and in barns with both full size horses and tiny ponies, its the ponies who will often rule the roost, especially when the bigger folks are of the super size draft variety.

Chapter 4 : Horse - Evolution of the horse | calendrierdelascience.com

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Horses One common misconception about evolution is that it occurs in a straight line, from an ancestor to a descendant. Although it is possible to trace the lineage, or history, of a certain species, the wider view shows that evolution is actually a very broad process. It may be helpful to visualize evolution as a tree from which many branches sprout, with each branch representative of a line of organisms evolving from the center of the tree. Many of these branches, or lineages, may die out. Other branches continue to grow and branch out further, resulting in the great diversity of life on Earth today. The history of the horse is an excellent example of this evolutionary "tree. In fact, the evolution of the horse is a story of great divergence and extinctions that continued through time, until only one species remained. Paleontologists have discovered a very good record of horse fossils in North America , where the horse first appeared, and have learned much about its early history. Other continents have been subsequently searched for fossils, and the migration and distribution of the horse is now well-known. From the remains of a few small populations of true wild horses in Europe and possibly central Asia , thriving communities of horses now exist in most regions on Earth. The Beginning The ancestors of the horse were browsers who fed on the bushy and leafy types of vegetation found in forests. They ate leaves of trees and shrubs and occasionally fed on tender grasses. Scientists deduced what they ate from studying the fossil teeth of animals that had a similar bone structure to the modern horse, but that had bumpy teeth, instead of the flat, grinding teeth horses have today. These early ancestors were small animals, about the size of a fox or a medium-sized dog. Evolutionary scientists recognize that environment often drives natural selection , and that natural selection leads to evolution. One force causing the transformation in horses was the constant alteration of climate that began about 60 million years ago and continues through the present. As the climate became hotter and drier, two important events occurred. First, the forests shrank and became patchy throughout North America. This reduced the habitat of the forest-dwelling members of the horse group. Second, different forms of grasses, called "C4 grasses," evolved. These grasses were tougher than the fragile forest grasses and better able to withstand harsh conditions. They spread throughout the more arid regions and formed vast plains. These plains created a less nutritious but more stable food source for the animals. The formation of the grasslands provided a new habitat in which many forms of animals, like the camels and horses, thrived. C4 grasses contained a high concentration of a glassy mineral called silica. The horse species that survived this new diet developed stronger, flatter, and more complex teeth than their forest relatives. Most of the evolution of horses was identified and traced by studying these changes in tooth shape and structure. The second major factor that affected the evolution of the horse was the emergence of more effective competitors, such as the artiodactyls herbivores like camels, deer, and bison , and swifter predators, especially the cats with their saberlike canine teeth. These swift and efficient predators found the smaller, forest-dwelling horses to be easy prey, resulting in the swift extinction of the horses. This kind of selection pressure favored the swifter and more wary equids of the open grasslands. So as one horse lineage died out, another evolved quickly. This pattern continued until the end of the Pleistocene epoch about 11, years ago. Only one species of horse, *Equus equus*, remains from this once diverse group of animals. The Story of the Bones All information scientists know about ancient horses has been gathered from the fossil remains of their skeletons. The skull, and the teeth it contains, can be read almost like a book, revealing how and when physical changes occurred and in what order. While no real "trends" are apparent in the overall picture of horse evolution because so many different species are involved, there were some general changes. As horses evolved, their toes were continually reduced in number until the condition of standing on one toe, like the modern horse, was achieved. The teeth became larger, with a more complex surface. The face became longer. In addition, the overall body size increased, growing from the tiny size of the forest dwellers to the significantly larger modern horse size. An animal called *Eohippus* is often cited as the first identifiable horse ancestor. *Eohippus* lived about 60

million years ago and is nicknamed the "dawn horse. The animal stood high on its toes, the tips of which were covered with strong little hooves. The teeth were the browsing type that had small bumps like those on human molars, but which more closely resembled those of a pig. Scientists estimate that this little horse was about 35 centimeters 14 inches high and weighed a little over 5 kilograms 12 pounds. The next candidate for selection in the fossil record is Hyracotherium, an animal that lived about 55 million years ago. Hyracotherium was more horselike than Eohippus, with its skeleton showing the characteristics that became unique to horses. The skull was longer and larger, and had a shallow basin at the end of shortened nasal bones where the nose is. The lower jaw was bigger and stronger than its relatives. The top and bottom incisors, or front teeth, met squarely and formed a "nipping-type" set of teeth. The back of the head no longer sloped backward but was now straight up and down. The neck bones were shaped so that the neck not only was longer, but could be rotated upward. Eventually, this feature helped the descendants of Hyracotherium to reach downward for grasses. Scientists believe that Hyracotherium and many other species of horses at this time had a short, prehensile proboscis, or snout, that could pick tasty leaves from high up in trees and bushes. The legs of Hyracotherium were longer than those of Eohippus and other horses. The front legs of its ancestors had been about 40 percent longer than the hind legs, but the two sets of legs of Hyracotherium were more evenly lengthened. The feet began to change shape as their function for running became greater. The carpals and tarsals wrist and ankle bones became smaller and more square. The metacarpals and metatarsals equivalent to the bones of a human palm were longer and more slender. The wrist and ankle became more stabilized to prevent side-to-side motion and aid in more efficient running. One of the ankle bones, the astragalus, formed a unique notch where it met the lower leg bone, the tibia. This permitted greater force to be exerted on the foot when pushed against for running. In the wrist, the carpals interlocked with the lower row, providing a stronger pull stroke when running. These trends continued in species named Orohippus and Meshippus. The fossil record reveals a divergence of evolution around the time of Meshippus, about 34 million years ago. One line contained the species Kalobatippus and Hypohippus, and died out with Megahippus. The other line, which leads to Equus, contained Miohippus and a tiny Archaeohippus and continued the skull and leg transformation. Archaeohippus was not highly successful, and its lineage died out relatively quickly. The ankle and wrist of Miohippus and its ancestors continued to strengthen, and the legs finally lengthened so that the animal stood higher in front than in the back. Meshippus was the first ancestor of the horse to have one fewer front toe, although all the remaining horses eventually had three toes on each foot. By the Oligocene the end of the Tertiary epoch , major changes in the horses began to take place. The forest dwellers were no longer dominant, and horses who ate the newly rising C4 grasses began to spread into the great grasslands. These horses were larger, with increasingly long legs, and were able to explore new territory. The wrist and ankle bones continued to become more square and flat so that the force of running would not destabilize the foot. The side-to-side motion of the wrist and ankle was reduced to prevent wobbling, with the back-and-forth motion becoming stronger. The trend toward an enlarged skull continued for the rest of horse history. The teeth, which were so important for grazing on tougher grasses, lost their roots and became hypsodont, or very high-crowned. One of the most identifiable characteristics of the horse is complex enamel, the tough outer coating of the tooth. Enamel resists the grinding actions of chewing. During the evolution of the horse, the enamel on the molars infolded from the sides, increasing the number of bumpy grinding surfaces. This trend continued for millions of years as horses ate more and more fibrous food. Many scientists believe that horses have the most complex and resistant teeth of almost all the large mammals. Some rodents have complex teeth, but like horses, they eat tough, fibrous foods, like seeds and silica-containing grasses. The skeleton of the horse continued to grow from about 24 million years ago to the present. While the legs got longer and longer, the scapular shoulder bone and pelvis hip bones stayed relatively the same size. The neck and back elongated. This change resulted in two advantages for the horse. Second, the longer back gave greater flexure for a fast running pace. When an animal like a horse or cheetah runs, one of the important parts of the running pace is the springlike flexure of the back. Some species of horses that showed these changes were Parahippus, Merychippus, Neohipparion, Pliohippus the first single-toed horse , Dinohippus, Hippidion, and Equus. Hippidion and Equus lived at the same time, but Hippidion became extinct sometime in the Pleistocene. By this time, horses were gone from

North America and it is believed that only a few populations continued in remote places. One populationâ€™a small, stocky, pony-type horse resistant to cold and wetâ€™was discovered in northwest Europe. Another populationâ€™horses that were larger and resistant to heatâ€™was found in central Asia. These central Asian horses were the ancestors of the desert horses of today. The horse was reintroduced to North America by the Spanish during their explorations in the early sixteenth century. Many escaped or were let go and are the ancestors of the wild mustang. Horses now thrive all over the world. They are considered animals of beauty and grace and many cultures, such as the Native Americans of the North American plains and nomadic peoples in Mongolia, depend on the horse.

Chapter 5 : All Horse Breeds with Pictures | Caballo Horsemarket

HORSE. HORSE. The horse in America dates at least from the single-hoofed Equus caballus that emerged in Pleistocene times, about 1 million years ago. Ancestors of the modern horse began a westward migration from North America across the land bridge between the north coast of Alaska and that of Siberia.

Bring fact-checked results to the top of your browser search. Evolution of the horse The evolutionary lineage of the horse is among the best-documented in all paleontology. The history of the horse family , Equidae , began during the Eocene Epoch , which lasted from about 56 million to The legs ended in padded feet with four functional hooves on each of the forefeet and three on each of the hind feetâ€”quite unlike the unpadded, single-hoofed foot of modern equines. Eohippus was, in fact, so unhorselike that its evolutionary relationship to the modern equines was at first unsuspected. It was not until paleontologists had unearthed fossils of later extinct horses that the link to Eohippus became clear. Numbered bones in the forefoot illustrations trace the gradual transition from a four-toed to a one-toed animal. Existing toe bones of the forefoot are numbered outward from the centre of the body. The line leading from Eohippus to the modern horse exhibits the following evolutionary trends: This is not to imply that there was a steady, gradual progression in these characteristics leading inevitably from those of Eohippus to those of the modern horse. Some of these features, such as grazing dentition, appear abruptly in the fossil record, rather than as the culmination of numerous gradual changes. Eohippus, moreover, gave rise to many now-extinct branches of the horse family, some of which differed substantially from the line leading to the modern equines. During the remainder of the Eocene, the prime evolutionary changes were in dentition. Orohippus , a genus from the middle Eocene, and Epihippus, a genus from the late Eocene, resembled Eohippus in size and in the structure of the limbs. But the form of the cheek teethâ€”the four premolars and the three molars found in each half of both jawsâ€”had changed somewhat. In Eohippus the premolars and molars were clearly distinct, the molars being larger. In Orohippus the fourth premolar had become similar to the molars, and in Epihippus both the third and fourth premolars had become molarlike. In addition, the individual cusps that characterized the cheek teeth of Eohippus had given way in Epihippus to a system of continuous crests or ridges running the length of the molars and molariform premolars. These changes, which represented adaptations to a more-specialized browsing diet, were retained by all subsequent ancestors of the modern horse. Fossils of Mesohippus , the next important ancestor of the modern horse, are found in the early and middle Oligocene of North America the Oligocene Epoch lasted from about Mesohippus was far more horselike than its Eocene ancestors: Mesohippus also had a larger brain. The fourth toe on the forefoot had been reduced to a vestige, so that both the forefeet and hind feet carried three functional toes and a footpad. The teeth remained adapted to browsing. By the late Oligocene, Mesohippus had evolved into a somewhat larger form known as Miohippus. The descendants of Miohippus split into various evolutionary branches during the early Miocene the Miocene Epoch lasted from about 23 million to 5. One of these branches, known as the anchitheres, included a variety of three-toed browsing horses comprising several genera. Anchitheres were successful, and some genera spread from North America across the Bering land bridge into Eurasia. It was a different branch, however, that led from Miohippus to the modern horse. The first representative of this line, Parahippus , appeared in the early Miocene. Parahippus and its descendants marked a radical departure in that they had teeth adapted to eating grass. Grasses were at this time becoming widespread across the North American plains, providing Parahippus with a vast food supply. Grass is a much coarser food than succulent leaves and requires a different kind of tooth structure. The cheek teeth developed larger, stronger crests and became adapted to the side-to-side motion of the lower jaw necessary to grind grass blades. Each tooth also had an extremely long crown, most of which, in the young animal, was buried beneath the gumline. As grinding wore down the exposed surface, some of the buried crown grew out. This high-crowned tooth structure assured the animal of having an adequate grinding surface throughout its normal life span. Adaptations in the digestive tract must have occurred as well, but the organs of digestion are not preserved in the fossil record. The change from browsing to grazing dentition was essentially completed in Merychippus , which evolved from Parahippus

during the middle and late Miocene. *Merychippus* must have looked much like a modern pony. It was fairly large, standing about 10 hands. The long bones of the lower leg had become fused; this structure, which has been preserved in all modern equines, is an adaptation for swift running. The feet remained three-toed, but in many species the footpad was lost, and the two side toes became rather small. Strong ligaments attached this hoofed central toe to the bones of the ankles and lower leg, providing a spring mechanism that pushed the flexed hoof forward after the impact of hitting the ground. *Merychippus* gave rise to numerous evolutionary lines during the late Miocene. Most of these, including *Hipparion*, *Neohipparion*, and *Nannippus*, retained the three-toed foot of their ancestors. One line, however, led to the one-toed *Plihippus*, the direct predecessor of *Equus*. *Plihippus* fossils occur in the early to middle Pliocene beds of North America the Pliocene Epoch lasted from about 5. Equus—the genus to which all modern equines, including horses, asses, and zebras, belong—evolved from *Plihippus* some 4 million to 4. *Equus* shows even greater development of the spring mechanism in the foot and exhibits straighter and longer cheek teeth. This new form was extremely successful and had spread from the plains of North America to South America and to all parts of the Old World by the early Pleistocene the Pleistocene Epoch lasted from about 2., to 11, years ago. *Equus* flourished in its North American homeland throughout the Pleistocene but then, about 10, to 8, years ago, disappeared from North and South America. Scholars have offered various explanations for this disappearance, including the emergence of devastating diseases or the arrival of human populations which presumably hunted the horse for food. Despite these speculations, the reasons for the demise of *Equus* in the New World remain uncertain. The submergence of the Bering land bridge prevented any return migration of horses from Asia, and *Equus* was not reintroduced into its native continent until the Spanish explorers brought horses in the early 16th century. During the Pleistocene the evolution of *Equus* in the Old World gave rise to all the modern members of the genus. The modern horse, *Equus caballus*, became widespread from central Asia to most of Europe. Origin of horse domestication Archaeological evidence indicates that the domestication of horses had taken place by approximately 6, years ago in the steppe lands north of the Black Sea from Ukraine to Kazakhstan. Despite intensive study over a long period of time, many questions remain about the early development of the species as it underwent domestication. One crucial question involves whether domestication was limited to a single location or occurred in multiple areas. Tied to this question of origins is whether domesticated horses spread throughout Eurasia or whether the practice of horse domestication spread to new areas, with local breeders capturing their own wild horses and introducing them to the domestic horse gene pool. Results of studies of mitochondrial DNA mtDNA, which is inherited only from the mother, showed a great deal of diversity among individuals and strongly supported the idea that wild horses from many different geographic areas contributed to the domestic horse. The mtDNA data clearly indicated that there were multiple sites of domestication, with a large number of mares in the first populations, and that genetic input from local wild horses had been introduced into the domestic gene pool as domesticated horses spread. In contrast, studies have revealed that the domestic horse is dominated by a single, paternally inherited Y chromosome lineage, in which there is almost no variation. An exception was a study of horses in southwestern China that found that some southern Chinese populations of male horses possessed a Y chromosome variant that was not present in any other breeds that had been tested. This variant may represent a different paternal lineage that survived in the region, or it may represent a recent mutation. The lack of variation on the Y chromosome would seem to indicate a very narrow origin for the domestic horse. However, the differences in variation between maternal and paternal lineages may reflect the differences in how breeders treated mares and stallions. It is possible that throughout history far more mares contributed to the founding of the domestic horse than stallions, because stallions can be difficult to handle. In addition, most selection is directed toward the males, because at the level of the individual they can produce such a large number of offspring compared with females. In other words, it is likely that a small number of relatively cooperative stallions may have been used to impregnate large numbers of mares. Studies examining other regions of DNA have revealed a high genetic diversity in horses, which is consistent with mtDNA results. Research at the turn of the 21st century indicated that there appears to have been an independent domestication event in the Iberian Peninsula the region containing Spain and Portugal, which served as a refuge for many species, including horses, during the Pleistocene and

Holocene glaciations. In addition, evidence indicates that humans spread domestic horses from western Eurasia and that domestic populations were supplemented with wild individuals which increased the genetic diversity of domestic horses. Based on modern genetic analyses, the answers to the questions surrounding horse domestication are that the horse has a diverse ancestry, that there was more than one domestication event, and that domestic horses have been widely interbred throughout the history of their domestication.

Chapter 6 : International Encyclopedia of Horse Breeds - Bonnie L. Hendricks - Google Books

The New Encyclopedia of The Horse by DK Publishing, Elwyn Hartley Edwards, Sharon Lucas In this superb expanded and updated volume, equestrian expert Elwyn Hartley Edwards traces the evolution of the horse, covering every major breed of horse and pony as well as the contribution the horse has made to civilization -- in the wild, at work, at war.

Since his death, his actions have taken on further meaning, and he is highly regarded as a symbol of Lakota resistance, oftentimes considered wakan spiritually powerful , and he continues to be emblematic of a traditional past. He apparently had yellow-brown hair and was initially called Light Hair and Curly. His father was a medicine man ; but less is known about his mother, who died young; his father later remarried. He was reportedly good with horses, and this garnered him the name His Horses Looking. His interest in a married woman, Black Buffalo Woman, led to a shooting that left Crazy Horse with a scar. In he also married Nellie Laravie, an year-old mixed-blood woman. His father and grandfather both were named Crazy Horse, and he himself finally earned this name in his teen years. Around this time, Crazy Horse had a vision that involved a horseman who is plainly dressed and riding untouched through a storm. Crazy Horse himself began to dress plainly, with a red-tailed hawk feather, and it was assumed that he and his horse were invulnerable. There are also reports that he would throw dust over his horse before battle and that he wore a small stone, or wotawe sacred charm , for protection. He was a quiet and introspective man who seldom joined in public events. In an effort to resolve the conflicts following from Western expansion, Red Cloud and Spotted Tail agreed to settle at agencies, camps associated with government Indian agents that later became reservations, with the signing of the Fort Laramie treaty. Crazy Horse alone resolved to stay on his own lands in the Black Hills , until several events led to his surrender. Gold was discovered in the Black Hills and battles commenced against those who resisted the order to reservation land. Crazy Horse fought his best in the last two great battles, Rosebud and Little Bighorn. These victories led to increased military pressure and famine. Crazy Horse at first assumed he was going to a council meeting, but resisted when he realized he might be imprisoned. A low-ranking cavalry soldier named William Gentiles is credited with stabbing Crazy Horse with a bayonet, intentionally or not. Crazy Horse died September 5, , at Fort Robinson, and his father buried his son at an undisclosed site with the agreement of those in attendance that they smoke a pipe and pledge not to reveal its location. Kadlecek, Edward, and Mabell Kadlecek. To Kill an Eagle: The Journey of Crazy Horse: Larissa Petrillo Pick a style below, and copy the text for your bibliography.

Chapter 7 : Encyclopedia of horses and ponies - Tamsin Pickeral - Google Books

The horse is a large, agile herbivore with muscular shoulders and hindquarters, a long, powerful neck, and a tapered head. The body is covered with short fur, and there is a long mane of hair growing down the crest of the neck, as well as very long hair growing from an otherwise relatively short tail.

Horse gait , Trot horse gait , Canter , and Ambling All horses move naturally with four basic gaits: Horse behavior and Stable vices Horses are prey animals with a strong fight-or-flight response. Their first reaction to threat is to startle and usually flee, although they will stand their ground and defend themselves when flight is impossible or if their young are threatened. Most light horse riding breeds were developed for speed, agility, alertness and endurance; natural qualities that extend from their wild ancestors. However, through selective breeding, some breeds of horses are quite docile, particularly certain draft horses. They are also social creatures that are able to form companionship attachments to their own species and to other animals, including humans. They communicate in various ways, including vocalizations such as nickering or whinnying, mutual grooming , and body language. Many horses will become difficult to manage if they are isolated, but with training, horses can learn to accept a human as a companion, and thus be comfortable away from other horses. They also have good spatial discrimination abilities. Horses excel at simple learning, but also are able to use more advanced cognitive abilities that involve categorization and concept learning. They can learn using habituation , desensitization , classical conditioning , and operant conditioning , and positive and negative reinforcement. Draft horse , Warmblood , and Oriental horse Horses are mammals , and as such are warm-blooded , or endothermic creatures, as opposed to cold-blooded, or poikilothermic animals. However, these words have developed a separate meaning in the context of equine terminology, used to describe temperament, not body temperature. For example, the "hot-bloods", such as many race horses , exhibit more sensitivity and energy, [96] while the "cold-bloods", such as most draft breeds , are quieter and calmer. They are bred for agility and speed. The term was once used to refer to breeds of light riding horse other than Thoroughbreds or Arabians, such as the Morgan horse. Horse sleep patterns and Sleep in non-humans When horses lie down to sleep, others in the herd remain standing, awake or in a light doze, keeping watch. Horses are able to sleep both standing up and lying down. In an adaptation from life in the wild, horses are able to enter light sleep by using a " stay apparatus " in their legs, allowing them to doze without collapsing. A horse kept alone will not sleep well because its instincts are to keep a constant eye out for danger. Horses spend four to fifteen hours a day in standing rest, and from a few minutes to several hours lying down. They only have to lie down for an hour or two every few days to meet their minimum REM sleep requirements. Evolution of the horse , Equus genus , and Equidae The horse adapted to survive in areas of wide-open terrain with sparse vegetation, surviving in an ecosystem where other large grazing animals, especially ruminants , could not. All that remains of them in modern horses is a set of small vestigial bones on the leg below the knee, [] known informally as splint bones. Thus proto-horses changed from leaf-eating forest-dwellers to grass-eating inhabitants of semi-arid regions worldwide, including the steppes of Eurasia and the Great Plains of North America. By about 15, years ago, Equus ferus was a widespread holarctic species. Wild horse A truly wild horse is a species or subspecies with no ancestors that were ever domesticated. Therefore, most "wild" horses today are actually feral horses , animals that escaped or were turned loose from domestic herds and the descendants of those animals. It is also known as the Mongolian wild horse; Mongolian people know it as the taki, and the Kyrgyz people call it a kirtag. The subspecies was presumed extinct in the wild between and , while a small breeding population survived in zoos around the world. In , it was reestablished in the wild due to the conservation efforts of numerous zoos. The tarpan or European wild horse Equus ferus ferus was found in Europe and much of Asia. It survived into the historical era, but became extinct in , when the last captive died in a Russian zoo. Attempts have been made to recreate the tarpan, [] [] [] which resulted in horses with outward physical similarities, but nonetheless descended from domesticated ancestors and not true wild horses. Periodically, populations of horses in isolated areas are speculated to be relict populations of wild horses, but generally have been proven to be feral or domestic. For example, the Riwoche horse of Tibet was

proposed as such, [] but testing did not reveal genetic differences from domesticated horses. Equus genus Besides the horse, there are six other species of genus Equus in the Equidae family. The most common hybrid is the mule , a cross between a "jack" male donkey and a mare. A related hybrid, a hinny , is a cross between a stallion and a jenny female donkey. History of horse domestication theories and Domestication of the horse Bhimbetka rock painting showing man riding on horse, India Domestication of the horse most likely took place in central Asia prior to BC. Two major sources of information are used to determine where and when the horse was first domesticated and how the domesticated horse spread around the world. The first source is based on palaeological and archaeological discoveries; the second source is a comparison of DNA obtained from modern horses to that from bones and teeth of ancient horse remains. The earliest archaeological evidence for the domestication of the horse comes from sites in Ukraine and Kazakhstan , dating to approximately 4000 BC.

Chapter 8 : Horse - Simple English Wikipedia, the free encyclopedia

The horse, Equus caballus, belongs to the order Perissodactyla ("odd-toed"), which includes nonruminating (not cud-chewing) hoofed mammals. The horse originated in North America a million years ago and migrated throughout the rest of the world.

Extinct equids restored to scale. Meshippus , Neohipparion , Eohippus , Equus scotti and Hypohippus. Wild horses were known since prehistory from central Asia to Europe, with domestic horses and other equids being distributed more widely in the Old World, but no horses or equids of any type were found in the New World when European explorers reached the Americas. When the Spanish colonists brought domestic horses from Europe, beginning in 1492, escaped horses quickly established large feral herds. In the 1700s, the early naturalist Buffon suggested this was an indication of inferiority of the New World fauna, but later reconsidered this idea. The tooth was sent to the Paris Conservatory , where it was identified by Georges Cuvier , who identified it as a browsing equine related to the tapir. Equus curvidens and another, which he named Equus americanus. A decade later, however, he found the latter name had already been taken and renamed it Equus complicatus. The sequence, from Eohippus to the modern horse Equus , was popularized by Thomas Huxley and became one of the most widely known examples of a clear evolutionary progression. Since then, as the number of equid fossils has increased, the actual evolutionary progression from Eohippus to Equus has been discovered to be much more complex and multibranching than was initially supposed. The straight, direct progression from the former to the latter has been replaced by a more elaborate model with numerous branches in different directions, of which the modern horse is only one of many. George Gaylord Simpson in [10] first recognized that the modern horse was not the "goal" of the entire lineage of equids, [11] but is simply the only genus of the many horse lineages to survive. Detailed fossil information on the distribution and rate of change of new equid species has also revealed that the progression between species was not as smooth and consistent as was once believed. Although some transitions, such as that of Dinohippus to Equus, were indeed gradual progressions, a number of others, such as that of Epihippus to Meshippus , were relatively abrupt in geologic time , taking place over only a few million years. The family lived from the Early Paleocene to the Middle Eocene in Europe and were about the size of a sheep , with tails making slightly less than half of the length of their bodies and unlike their ancestors, good running skills for eluding predators. Eohippus appeared in the Ypresian early Eocene , about 52 mya million years ago. It had 44 low-crowned teeth, in the typical arrangement of an omnivorous, browsing mammal: Its molars were uneven, dull, and bumpy, and used primarily for grinding foliage. The cusps of the molars were slightly connected in low crests. Eohippus browsed on soft foliage and fruit, probably scampering between thickets in the mode of a modern muntjac. It had a small brain, and possessed especially small frontal lobes. However, all of the major leg bones were unfused, leaving the legs flexible and rotatable. Its wrist and hock joints were low to the ground. The forelimbs had developed five toes, of which four were equipped with small proto-hooves; the large fifth "toe-thumb" was off the ground. The hind limbs had small hooves on three out of the five toes, while the vestigial first and fifth toes did not touch the ground. During the Eocene, an Eohippus species most likely Eohippus angustidens branched out into various new types of Equidae. Thousands of complete, fossilized skeletons of these animals have been found in the Eocene layers of North American strata, mainly in the Wind River basin in Wyoming. Similar fossils have also been discovered in Europe, such as Propalaeotherium which is not considered ancestral to the modern horse. It resembled Eohippus in size, but had a slimmer body, an elongated head, slimmer forelimbs, and longer hind legs, all of which are characteristics of a good jumper. Although Orohippus was still pad-footed, the vestigial outer toes of Eohippus were not present in Orohippus; there were four toes on each fore leg, and three on each hind leg. The most dramatic change between Eohippus and Orohippus was in the teeth: Both of these factors gave the teeth of Orohippus greater grinding ability, suggesting Orohippus ate tougher plant material. Epihippus[edit] In the mid-Eocene, about 47 million years ago, Epihippus , a genus which continued the evolutionary trend of increasingly efficient grinding teeth, evolved from Orohippus. Epihippus had five grinding, low-crowned cheek teeth with well-formed crests. A

late species of *Epihippus*, sometimes referred to as *Duchesnehippus intermedius*, had teeth similar to Oligocene equids, although slightly less developed. Whether *Duchesnehippus* was a subgenus of *Epihippus* or a distinct genus is disputed. The forests were yielding to flatlands,[citation needed] home to grasses and various kinds of brush. In a few areas, these plains were covered in sand ,[citation needed] creating the type of environment resembling the present-day prairies. Restoration of *Mesohippus* In response to the changing environment, the then-living species of Equidae also began to change. In the late Eocene, they began developing tougher teeth and becoming slightly larger and leggier, allowing for faster running speeds in open areas, and thus for evading predators in nonwooded areas[citation needed]. About 40 mya, *Mesohippus* "middle horse" suddenly developed in response to strong new selective pressures to adapt, beginning with the species *Mesohippus celer* and soon followed by *Mesohippus westoni*. In the early Oligocene, *Mesohippus* was one of the more widespread mammals in North America. It walked on three toes on each of its front and hind feet the first and fifth toes remained, but were small and not used in walking. The third toe was stronger than the outer ones, and thus more weighted; the fourth front toe was diminished to a vestigial nub. Judging by its longer and slimmer limbs, *Mesohippus* was an agile animal. Its back was less arched, and its face, snout, and neck were somewhat longer. It had significantly larger cerebral hemispheres , and had a small, shallow depression on its skull called a fossa , which in modern horses is quite detailed. *Mesohippus* had six grinding "cheek teeth", with a single premolar in frontâ€”a trait all descendant Equidae would retain. *Mesohippus* also had the sharp tooth crests of *Epihippus*, improving its ability to grind down tough vegetation. *Miohippus*[edit] Around 36 million years ago, soon after the development of *Mesohippus*, *Miohippus* "lesser horse" emerged, the earliest species being *Miohippus assiniboensis*. As with *Mesohippus*, the appearance of *Miohippus* was relatively abrupt, though a few transitional fossils linking the two genera have been found. *Mesohippus* was once believed to have anagenetically evolved into *Miohippus* by a gradual series of progressions, but new evidence has shown its evolution was cladogenetic: Its facial fossa was larger and deeper, and it also began to show a variable extra crest in its upper cheek teeth, a trait that became a characteristic feature of equine teeth. *Miohippus* ushered in a major new period of diversification in Equidae. *Kalobatippus* probably gave rise to *Anchitherium* , which travelled to Asia via the Bering Strait land bridge , and from there to Europe. Its third toe was stronger and larger, and carried the main weight of the body. Its four premolars resembled the molar teeth; the first were small and almost nonexistent. *Merychippus*[edit] *Merychippus* , an effective grazer and runner In the middle of the Miocene epoch, the grazer *Merychippus* flourished. It had wider molars than its predecessors, which are believed to have been used for crunching the hard grasses of the steppes. The hind legs, which were relatively short, had side toes equipped with small hooves, but they probably only touched the ground when running. *Hipparion*[edit] *Protohippus simus* Three lineages within Equidae are believed to be descended from the numerous varieties of *Merychippus*: *Hipparion* , *Protohippus* and *Pliohippus*. The most different from *Merychippus* was *Hipparion*, mainly in the structure of tooth enamel: A complete and well-preserved skeleton of the North American *Hipparion* shows an animal the size of a small pony. They were very slim, rather like antelopes , and were adapted to life on dry prairies. On its slim legs, *Hipparion* had three toes equipped with small hooves, but the side toes did not touch the ground. In North America, *Hipparion* and its relatives *Cormohipparion* , *Nannippus* , *Neohipparion* , and *Pseudhipparion* , proliferated into many kinds of equids , at least one of which managed to migrate to Asia and Europe during the Miocene epoch. *Pliohippus*[edit] *Pliohippus pernix* *Pliohippus* arose from *Callippus* in the middle Miocene, around 12 mya. It was very similar in appearance to *Equus* , though it had two long extra toes on both sides of the hoof, externally barely visible as callused stubs. The long and slim limbs of *Pliohippus* reveal a quick-footed steppe animal. Until recently, *Pliohippus* was believed to be the ancestor of present-day horses because of its many anatomical similarities. However, though *Pliohippus* was clearly a close relative of *Equus*, its skull had deep facial fossae, whereas *Equus* had no fossae at all. Additionally, its teeth were strongly curved, unlike the very straight teeth of modern horses. Consequently, it is unlikely to be the ancestor of the modern horse; instead, it is a likely candidate for the ancestor of *Astrohippus*. It was originally thought to be monodactyl, but a fossil find in Nebraska shows some were tridactyl. Mounted skeleton of Hagerman horse *Equus simplicidens* *Plesippus* is often considered an intermediate stage between *Dinohippus* and the extant genus, *Equus*. The

famous fossils found near Hagerman, Idaho were originally thought to be a part of the genus Plesippus. Hagerman Fossil Beds Idaho is a Pliocene site, dating to about 3. The fossilized remains were originally called Plesippus shoshonensis, but further study by paleontologists determined the fossils represented the oldest remains of the genus Equus. At the end of the Pliocene, the climate in North America began to cool significantly and most of the animals were forced to move south. One population of Plesippus moved across the Bering land bridge into Eurasia around 2.

Chapter 9 : Horse - International Standard Bible Encyclopedia

Lipizzaner horse A *Lipizzaner*, or *Lipizzan*, horse performing a *capriole*, "the leap of the goat," in which the horse jumps into the air from a raised starting position. The breed was named after the stud farm at Lippiza, which was founded near Trieste, Italy, in