

EVOLUTION OF HORSE

Horses are one of the oldest forms of mammals. Evolution of horse dates back to Eocene epoch, more million than 50 million years ago. Primary centre of evolution were Great Plains of North America, from where species migrated to Europe and Asia from time to time. Horses became extinct in North America by the end of Pleistocene epoch but their offshoots in Europe and Asia flourished. Evolution of horse was triggered by a change in the climate and vegetation during lower coenozoic period, when grasslands in most parts of the world replaced forests.

The main modifications in the body of horses can be outlined as follows: -

1. Increase in the size and height of the body from a small, rabbit-like animal to 6 feet tall grassland animal.
2. Gradual enlargement and better development of the third digit (median digit) and reduction of the other lateral digits.
3. Lengthening of the limbs and perfection of the hoof for fast running in open grasslands.
4. Reduction of ulna bone in the fore leg and fibula in the hind leg and strengthening of radius and tibia.
5. Change from digitigrade to unguligrade locomotion for fast running.
6. Elongation of the preorbital or facial region of the skull and migration of eyes to the top of head.
7. Modification of teeth from brachydont (low-crowned) to hypsodont (high crowned) to withstand tougher food (grass).
8. Increase in the size and complexity of the brain for superior intelligence.
9. Reduction in pectoral girdle and disappearance of the weak clavicle.
10. Body became streamlined, muscles tight, without loose fat, for long and sustained running.
11. Nostrils became wide to allow more air into strong lungs and stamina increased.

The important stages in the evolution of horse is summarised below:

1. EOHIPPUS (genus *Hyracotherium*)

- a) Nicknamed "Dawn Horse". Lived about 56 million to 33.9 million years ago
- b) Looked like a deer in skin, most likely for camouflage.
- c) Had 5 toes on frontal feet, and three on hind feet.
- d) Toes ended in a strong, thick, horny type nail and their tips.
- e) had little or no lateral vision.
- f) teeth were similar to a pig, short and crowned for eating plants.
- g) stood about 14 inches high at his shoulder and weighed around 12 lbs

2. MESOHIPPUS

- a) 35 to 40 million years ago
- b) Stands 18-24 inches at the shoulder.
- c) Longer snout, legs, and neck, compared to Eohippus.
- d) Less arched back.
- e) Three toes on each foot.
- f) Larger limbs and legs caused the Mesohippus to run faster, eliminating the need for camouflage.

3. MIOHIPPUS

- a) Ankle joint changed.
- b) Slight dish, concave, to it's face. S
- c) stood at a minimum of 24 inches at the shoulder.
- d) Weighed much more then the Mesohippus.
- e) Head longer. Incisor teeth form.
- f) Mesohippus and the Miohippus species overlapped for more then 4 million years.
- g) 5 million years until another change ocured

4. MERYCHIPPUS

- a) 30 million years ago
- b) Looked very similar to today's horses
- c) Stood over 36 inches tall at shoulder.
- d) Still had three toes, outside toe became weaker.
- e) Head changed, the eye moved, allowing better vision.

- f) Longer neck, for easier grazing.
- g) Developed defenses.
- h) Developed a better sense of smell.
- i) Toes started turning into hooves.
- j) Teeth developed into the teeth we know today.

5. PILOHIPPUS

- a) 12-6 million years ago
- b) Considered direct link to the Equus, which is, in short, the horse we know today.
- c) First single toed, or hooved horse.
- d) Strong leg ligaments, to increase speed and power.
- e) Had a dished face.
- f) Resembled a pony in many features.

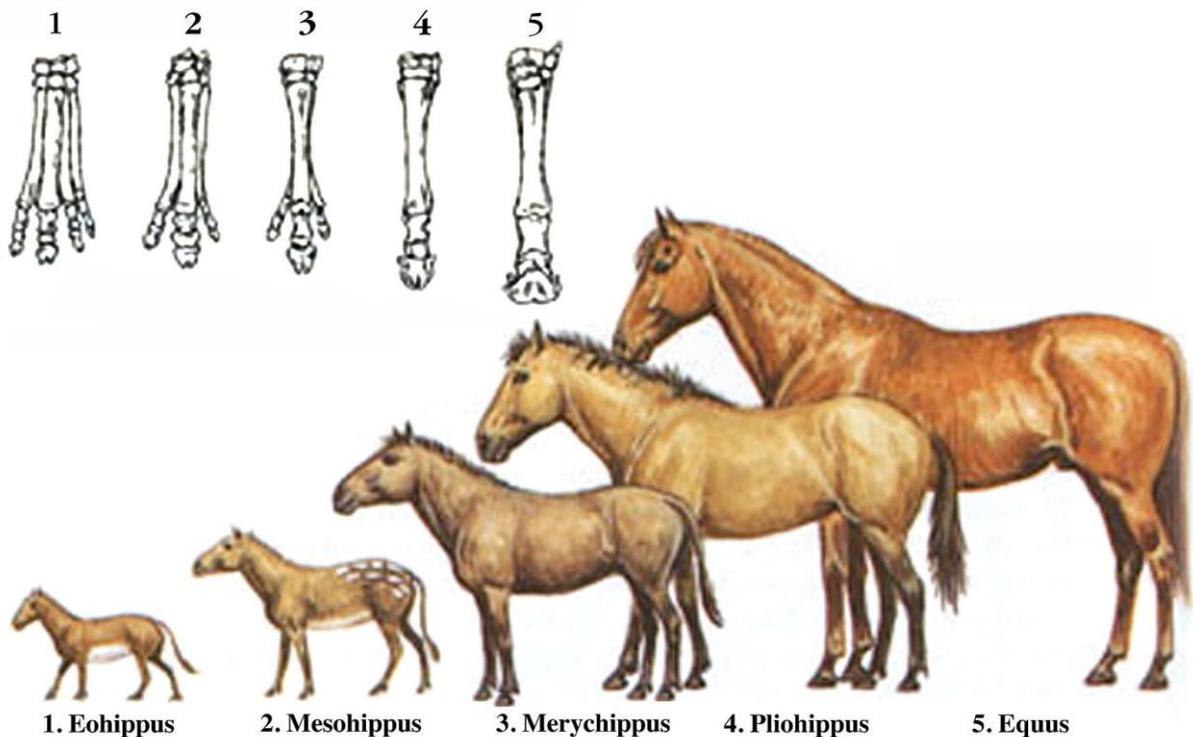
6. EQUUS

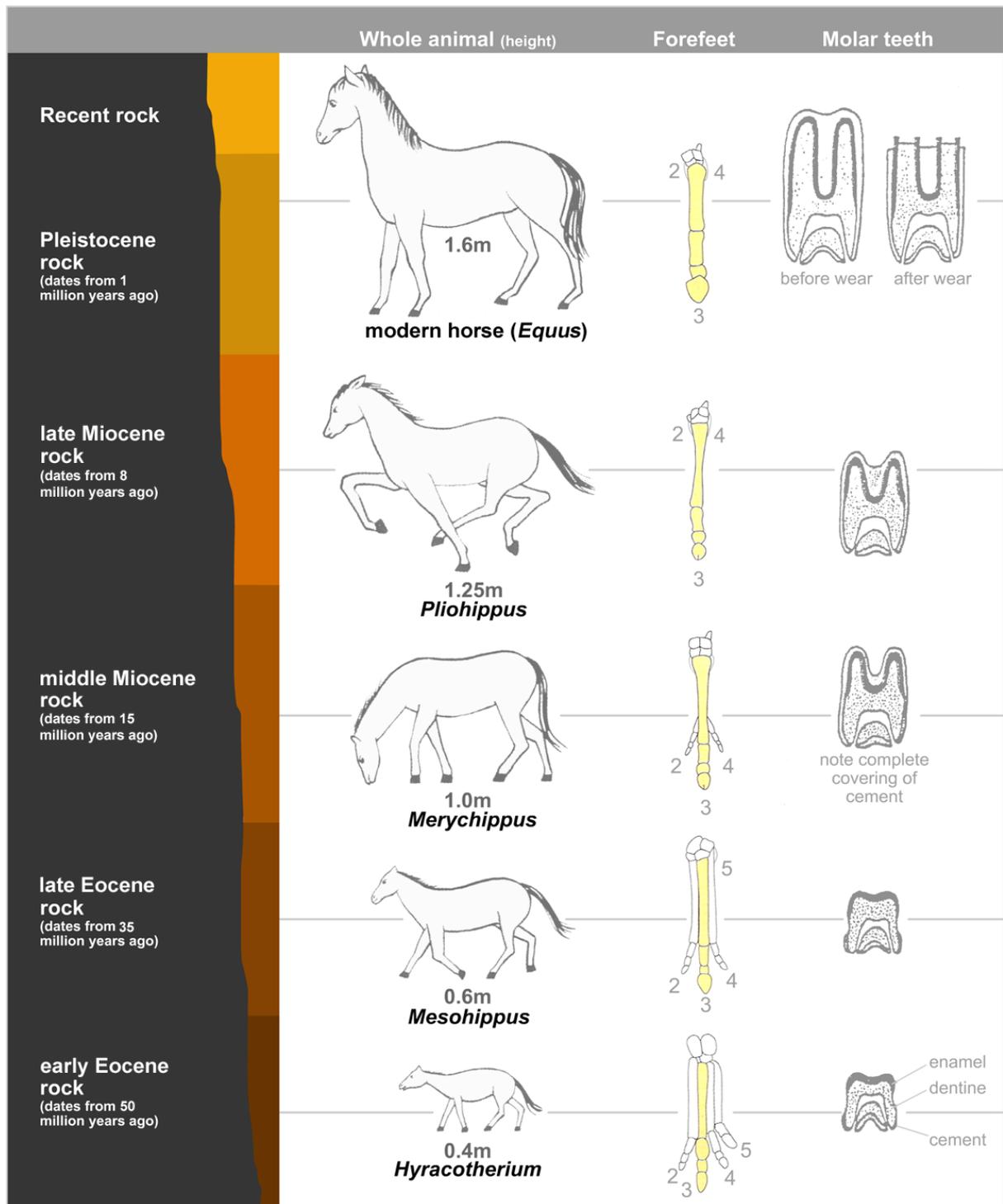
- a) 5 million years ago
- b) This is the horse we know today
- c) Does not have a dished face
- d) Many strands of horses arose after the Pilohippus, the Equus was the only to survive.
- e) About 3,000 years ago, the modern day horse was used for migration, farming, warfare, sport, communication, and travel.
- f) Horses are now used for many of the same reasons, and more

Hyracotherium more commonly known as *Eohippus*, a name given by the American paleontologist Othniel Charles Marsh, are properly placed in the genus *Hyracotherium*, the name given earlier by British paleontologist Richard Owen.

Fossils of Hyracotherium were found in Europe and in North America (Wyoming and New Mexico). **Mesohippus** ("middle horse") suddenly developed in response to strong new selective pressures to adapt. 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). Mesohippus was slightly larger than Epihippus, Its back was less arched, and its face, snout, and neck were somewhat longer. Merychippus was

an effective grazer and runner. In the middle of the Miocene epoch, the grazer *Merychippus* flourished. **Merychippus** had wider molars than its predecessors, which are believed to have been used for crunching the hard grasses of the steppes. **Pliohippus** arose in the middle Miocene.. 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.





P.S. This note is prepared from the books and online resources for the benefit of students and there is nothing original in it.