#464996
Topic: Organic evolution

An example of homologous organs is

A Our arm and a dog's fore-leg

B Our teeth and an elephant's tusks

C Potato and runners of grass

D All of the above

Solution

Homologous organs are those which have a similar structure and similar origin but perform different functions. In humans, the incisors are sharp teeth present in the front of th mouth that are used for cutting and tearing food.
In elephants, the incisors are modified to tusks that are used for defense. Hence our teeth and elephant's tusks are homologous. Thus the correct answer is option B.

#464997
Topic: Human evolution

In evolutionary terms, we have more in common with

A A Chinese school-boy

B A chimpanzee

C A spider

D A bacterium

Solution

In terms of evolution, organisms belonging to the same species have more in common than organisms belonging to different species of the same genus or different genus. We have more in common with a Chinese school-boy because both belongs to the same species of *Homo sapiens*, and thus, share a common ancestor.

#464999
Topic: Organic evolution

How are the areas study of evolution and classification interlinked?

Solution

Organisms are classified into various groups on the basis of similarities and dissimilarities they share amongst each other. The more characteristics two species have in commo more closely they are related to each other. The closeness of two species indicates a common ancestor between them. Thus, classification of species is a reflection of their evolutionary relationship.

#465000
Topic: Organic evolution

Explain the terms analogous and homologous organs with examples.

Solution

The structures that share a similarity in terms of their morphology, genetics, anatomy, embryology, may or may not have similar function but have the same origin are called as homologous organs. For example, the forelimbs of humans and the wings of birds look different externally but their skeletal structure is similar. The structures that look similar superficially and are dissimilar anatomically but does the similar functions are called as analogous structures. For example, the wings of birds and insects.

#465002
Topic: Organic evolution

Explain the importance of fossils in deciding evolutionary relationships.

Solution

Fossils are the remains or impression preserved of prehistoric plant or animal embedded in rock. Fossils provide us with the knowledge of animals and plants that lived hundreds of years ago which are now extinct. It helps us to compare the animals that lived during prehistoric times with its present descendants. They provide the missing link the study of evolution. They are helpful in providing information while forming a sequence of the organisms in the pathway of evolution.

#465003

Topic: Organic evolution

What evidence do we have for the origin of life from inanimate matter?

Solution

Miller-Urey experiment provided evidence for the origin of life from inanimate matter. In the experiment, they created an atmosphere containing molecules like ammonia, methane and hydrogen sulphide, but no oxygen. This atmosphere was similar to the atmosphere present during the primitive Earth. Temperature was maintained constant at 1(
^{o}C and sparks were passed through the mixture to stimulate lightning. After a particular time, certain amount of the carbon from methane had been converted to simple compounds of carbon like amino acids. Amino acids are the precursors of the proteins and proteins are the molecules that support the life in basic form.

#526201

Topic: Theories of evolution

Explain antibiotic resistance observed in bacteria in light of Darwinian selection theory.

Solution

According to Darwin's natural selection theory, Only those organisms that can The organisms that can adapt to the changing environment will survive and those organisms that cannot embrace the change in their environment will be eliminated. So, organisms tend to acquire new characteristics in order to survive and continue their population. When people started using penicillin most bacteria were susceptible to penicillin and were easily killed in the presence of penicillin. However, with time the bacteria developed methods to fight the antibiotic and survive in the presence of penicillin. MRSA (Methicillin-Resistant *Staphylococcus aureus*) is one good example of how well the bacteria develop drug resistance over time.

#526202

Topic: Organic evolution

Find out from newspapers and popular science articles any new fossil discoveries or controversies about evolution.

Solution

Paleontology is the field of science the helps us to understand about evolution by the use of fossils.

Fossils of dinosaurs were found that have revealed the evolution of reptiles in Jurassic period. Two unusual fossils recently found in China which brings the controversy over th evolution of birds. Confuciusornis lived during the Cretaceous period in China is the genus of the primitive bird.

#526206

Topic: Human evolution

Try to trace the various components of human evolution. (hint: brain size and function, skeletal structure, dietary preference, etc.)

Solution

	Name	Brain capacity	skeletal structure	Dietary preference
	Dryopethicus africans	--	Posture similar to chimpanzees and gorillas, They walked on their knuckles.	Herbivore
	Ramaphithecus	--	Semi-erect	Herbivore
	Australopethicus africans	450 cm^3	Fully-erect	Herbivore
	Homo habilus	735 cm^3	Fully-erect	Carnivore
	Homo erectus	800-1100 cm^3	Fully-erect	Omnivore
	Homo meanderthalnsis	1300-1600 cm^3	Fully-erect	Omnivore
	Homo sapiens fossilis	1650 cm^3	Fully-erect	Omnivore
	Homo sapiens sapiens	1200-1600 cm^3	Fully-erect	Omnivore

#526209

Topic: Organic evolution

List 10 modern-day animals and using the internet resources link it to a corresponding ancient fossil. Name both.

Solution

The 10 modern day animals and their corresponding ancient fossils are:

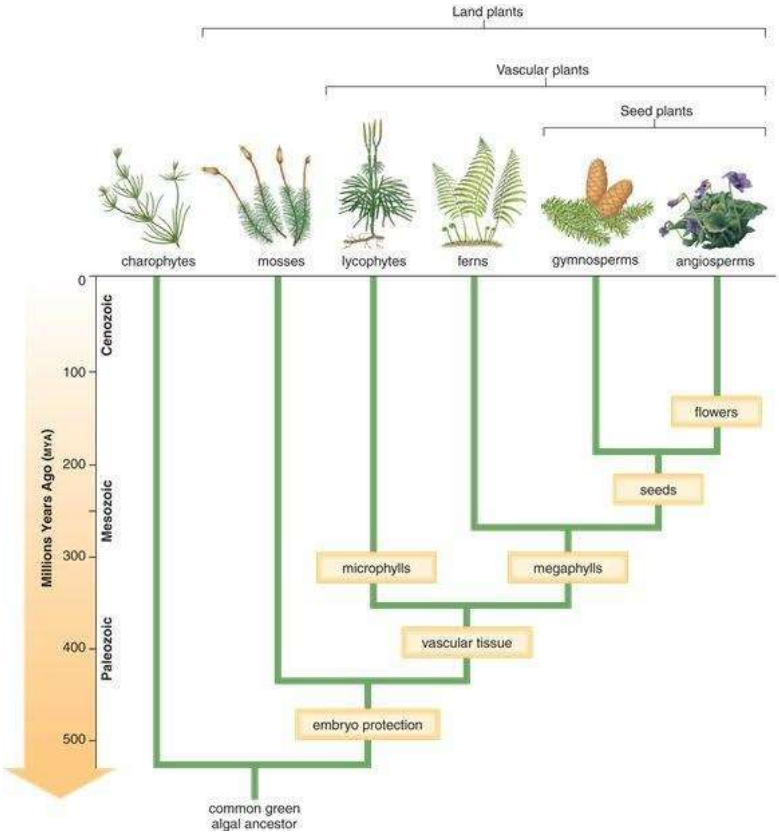
1. Human - Ramapithecus
2. Elephant - Moerithers
3. Gorilla - Dryopithecus
4. Horse - Eohippus
5. Bat - Archaeonycteris
6. Fish - Arandaspis
7. Octopus - Belemnite
8. Dog - Leptocyon
9. Giraffe - Palaeotragus
10. Whale - Protocetus

#526210

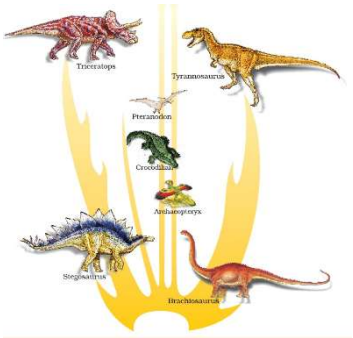
Topic: Organic evolution

Practice drawing various animals and plants.

Solution



If the giant cell possess photosynthesis evolved into the plants and those that was not able to capture sunlight for photosynthesis evolved into the animals. In plants, first tracheophytes formed and from which bryophytes, pteridophytes, gymnosperms and highly evolved is angiosperm. Like that only animal are evolved reptiles to the mammals.



#526212

Topic: Organic evolution

Describe one example of adaptive radiation.

Solution

Diversification of ancestral line into different forms which in turn occupy diverse ecological niche is referred to as adaptive radiation. For example, the ancestral seed-eating stock of Darwin's finches diversified based on different types of food that were (plants, seeds, insects, cactus etc) available The of beak adapted to that food and got modified accordingly. The geographical isolation led reproductive isolation and thus, the evolution of new species of finches from the parental stock.

#526213
Topic: Organic evolution

Can we call human evolution as adaptive radiation?

Solution

Diversification of ancestral line into different forms which in turn occupy diverse ecological niche is referred to as adaptive radiation. It is a quick process. Human evolution is a slow gradual process making it different from adaptative radiation. Therefore, human evolution can not be called as adaptive radiation.

#526214
Topic: Mechanism of evolution

Using various resources such as your school library or the internet and discussions with your teacher, trace the evolutionary stages of horse.

Solution

The evolution of horse started with Eohippus during Eocene period.

Evolutionary stages of horse: Eohippus- Mesohippus- Merychippus- Pliohippus- Equus

1) Eohippus (Dawn horse)- It had a short head and neck. This horse was about only 28 cm high at the shoulders.

2) Mesohippus (Intermediate horse)- It was slightly taller than Eohippus (60cm). It had three toes in each foot.

3) Merychippus (Ruminating horse)- It had the size of approximately 100 cm. The molars were adapted for chewing the grass.

4) Pliohippus (Pliocene horse)- It resembled the modern horse and was around 108 cm tall.

5) Equus (Modern horse)- It is about 150 cm high at the shoulders. They have incisors for cutting grass and molars for grinding food.

Evolution of horse includes loss of toes and fingers, increase in height and development of long crowned molars for grazing that transformed *Eohippus* (the Dawn horse of Eocene epoch) into *Mesohippus* (the Intermediate horse of Oligocene), *Merychippus* (the Ruminant horse of Miocene), *Pliohippus* (the Pliocene horse) and finally into *Eqqus*; th recent horse. The *Eohippus* was 28 cm in height, had four fingers and three toes and short crowned molars for grinding. *Mesohippus* was 60 cm in height, had three fingers ar three toes and short crowned molars for grinding. *Merychippus* was 100 cm in height, had only the third finger and third toe and long crowned molars for grazing. The second and fourth digits were transformed into the split. Transformation of *Merychippus* into *Pliohippus* (108 cm) and finally into *Eqqus* (150 cm) involved an increase in height.