Evolution Of Primates Within The Epoch Of The Cenozoic Era: The Lemuroids, Tarsiers, Monkeys, Apes And Man

Over very many years primates have changed in many distinct ways. Every change that these primates have gone through is categorized within the Cenozoic era. The Cenozoic era is known to be the era of mammals. Within the Epoch of the Cenozoic era there are four grades of change with the oldest being 65 million years ago and the earliest being 1.8 million years ago. Within each grade there is a main primate event that occurred through the Cenozoic era. Primates have evolved through a series or through grades. Some of the evolution that happened was “Hominids display prominent jaws, are tailless, and have large brains” (PBS-SOCAL 1). Below I will outline these stages and the major modifications which took place in each. It is highly likely that the impetus for primate evolution was an adaptation to the arboreal setting and the interaction of genetic and natural selection factors.

Grade I - The Lemuroids

The Cenozoic era has different eras within it; the first era classified is the Paleocene era. This era existed 65 million years ago and it is the first epoch of the Palaeocene Period in the modern Cenozoic Era. According to Britannica “One of the most striking features of vertebrate life in the Paleocene Epoch was the complete absence of dinosaurs and other reptilian groups that were dominant during the preceding Cretaceous Period. Another striking feature was the rapid proliferation and evolution of mammals” (Paleocene Epoch 1). The Paleocene era includes Lemuroids, which are known more specifically as lemurs, lorises, and galagos. These Lemuroids each have their differences as well as their similarities that make them unique to what they are. Lemurs’ scientific name is Lemuridae and they are mostly found in Madagascar. They are medium-sized arboreal primates that have bushy tails and leap several meters from tree to tree. Most Lemuridae’s walk on all four feet, they have a good sense of smell and use both eyes together to see. Lemuridae’s are herbivores, which classifies them as plant-eaters. These primates are known to usually eat fruits, leaves, and sometimes nectar. They get their food, like fruits, off of trees and sometimes eat flowers. Lorises are in the subfamily Loriinae in the family Lorisidae. These animals are nocturnal and are usually found in India and in Southeast Asia in tropical and woodland forests. They are slow and climb trees cautiously on all four legs. Their diet is composed of insects, fruits, and leaves. A galago is a small nocturnal primate of Africa that has long bushy hair and very big eyes and ears. They are slow and small and cannot compete with the other primates in Africa. The competition is less at night and this is why they are nocturnal. This is a mechanism used by the animal as a way of being safe. This mechanism came through due to evolution and the change that occurred through these primates. Their big eyes help them to see at night, and they have a good sense of smell that helps them track insects in the dark. They eat insects, fruit, and leaves.

All three of these animals listed have many things in common. They are all nocturnal primates that eat fruits, leaves, plants, and insects. I believe that they are nocturnal because there is a lot less competition at night, so they have a better chance at survival. As I mentioned earlier, this is a mechanism that has developed through evolutionary change…..

Grade II- Tarsiers

The next Epoch is the Eocene time period. This time period was 53 million years ago and is the second of the four-time periods and of the paleogene period in the Cenezoic Era. It is a major division of the geological timescale and is marked by the emergence of the first common mammals. The climate of this time era varied from being really hot to be really cold. The Eocene era had the warmest climate in the Cenozoic Era and ended having an extremely cold climate. At the time of this cold climate, the Antarctic ice sheet began to form and take its place.

The Eocene time era has many Tarsiers which are tree-dwelling nocturnal primates. We notice that the primates are still tree-dwelling and nocturnal just like the Paleocene era. Tarsiers though unlike the mammals discussed earlier, are carnivores that feed on flesh. What Tarsiers usually eat are lizards, insects, and birds. They jump on their prey and catch it. All Tarsiers use their precise and great hearing to locate their prey. Tarsiers have a bone in their ankle called a tarsal that allows them to jump 40 times their height. Their hind legs can be as long as twice their body length and this allows them to jump really far. Since tarsiers cannot walk they hop on the ground and mark trees with their urine as an indicator to them so they can hop their way back to their dwelling area.

Grade III- Monkeys

The third evolutionary time period is the Oligocene epoch. This time period began approximately 35 million years ago. The name Oligocene is derived from a Greek word that refers to the scarcity of additional modern mammalian species after a burst of evolution during the Eocene. The climate of the Eocene Epoch was warmer than that of the modern climate. Evidence of cooling however started to rise with the development of warm-blooded animals. This Epoch showed a slow but steady climate change that was in accordance with the animals during that time. Many of the fossils found in this Epoch were located in Fayum, Egypt, which is part of upper Egypt that not many people know about. Over 1,000 specimens of these fossils have been found from the Fayum, Animals found in this era are placed into 3 families: The Oligopithecus, Parapithecids, and Propliopithecids family. Oligopithecus are fossil primates that lived in Africa and are known from their unique jaw bone. Members of this family are among the earliest catarrhine anthropoid primates. The earliest group of Oligopithecus is the Catopithecus which is an early fossil that postdates apes and early primates. Catopithecus is represented by several crushed crania, and this cranium showed a 2.1.2.3 dental formula. This led scientists to believe that Catopithecus is the earliest Catarrhine.

The most abundant of the Oligocene fossils found in Fayum are from the parapithecids family. They are approximately the size of a squirrel and have many Anthropoid features. What is unusual about these is that they have a 2.1.3.3. Dental formula and this shows that it appeared before the old and new world anthropoids. This teeth formation also suggests a diet that was sufficient in fruits and most likely some seeds. Another unusual thing that the formula shows is the sexual dimorphism of having one male and multiple females and offspring. The limbs of this creature suggest that it was a quadruped that was good at leaping.

The third and final family of this stage is called Propliopithecids. Scientists believe that the most important fossil is within this family. The genus of this family is Aegyptopithecus, and is believed to be the ancestor of both the new and old world monkeys and hominoids. Aegyptopithecus is

known for well-preserved crania, jaw fragments, and limb bones. This monkey is said to be the size of a modern-day howler monkey and weigh approximately 15 pounds. The skull is pretty small and resembles a modern monkey in some aspects. The limbs found reveal that this monkey was a short-limbed, heavily muscled, slow-moving quadruped. Aegyptopithecus were also believed to eat seeds, fruits, and leaves.

Grade IV - Apes and Man

The fourth era is broken down into four Epochs. The four Epochs are the Miocene, Pliocene, and Pleistocene era. These eras go back 1.8-25 million years ago. The Miocene era is….

Miocene Epoch

The first era is the Miocene era and it goes back 25 million years ago. In this era we see much diversification of anthropoids. There are two species that fought for control and those where Cercopithecoid and the Hominoids. Cercopithecoid fall into two families one being extinct and one being the living. The extinct family is called Victoriapithecus and they were found throughout Northern and Eastern Africa as early as 19 million years ago. The Victoriapithecidae represent a cercopithecoid and that is the last common ancestor of all living old world monkeys. The best known Victoriapithecus is a small monkey whose skull relates it to both the colobine and the cercopithecine with features to place it in both families. The molars of this monkey show a diet of hard fruits and seeds. By 12 million years ago these monkeys had been replaced by old world monkeys whose direct descendants are still alive today. The monkeys that replaced them are found in African deposits and are very small. They are approximately 8 to 9 pounds so they are not lightweights. These monkeys quickly went into Europe and Asia and began reentering Africa. The second family which is the living group is called Cercopithecidae. In East Africa, a baboon like Theropithecus is the dominant Cercopithecine in the area. From analysis of its hands and teeth indications are made that this species had a diet that was exclusively on grass. Also, in this time era a lot of things happened. One of those things according to the University of California Museum of Paleontology is “...new ecosystems in the sea led to new forms there. Kelp forests appeared for the first time, as did sea otters and other critters unique to those environments. At the same time, such ocean-going mammals as the Desmostylia went extinct” (Museum of Paleontology 1)

The second era is the Pliocene era and this era is the second and youngest epoch of the Neogene Period in the Cenozoic Era. It took place 5 million years ago and ended 2.5 million years ago. During this time period, climate became cooler, drier, and seasonal just like the modern climate. The Pliocene era in fact looked extremely similar to the world we live in today. Also the earliest hominids evolved in the early Pliocene Epoch. One of the biggest changes made was the change of bipedalism. Bipedalism is the ability to walk on only two feet. Many theories have been made trying to figure out why primates have become bipedal. Many people say that primates became bipedal because it was easier for them to carry things. Others say that this happened because primates needed better surveillance of the environment around them. No matter the reason for bipedalism it was one of the biggest changes made during the Pliocene era.

Pleistocene Epoch

The last and final stage was the Pleistocene Epoch. This Epoch occurred 1.8 million years ago. This time era has been called the ice age because there would be times when ice sheets covered the Northern continents. According to ThoughtCo, “The dozen or so ice ages of the Pleistocene epoch wreaked havoc on megafauna mammals, the largest examples of which were simply unable to find enough food to sustain their populations”(ThoughtCo 1) Climate was not stable during this time period there would always be ice caps that would come and go. Many hominids were widely distributed in the old world. Hominins are the tribe of Homininae that comprises of Humans, and the Common Chimpanzee and the Bonobo. They were being discovered in Africa, Asia, and Europe throughout the Pleistocene era. This era is special because it includes Homo Sapiens which are humans, and it also includes apes. One of the premodern fossils of a human that has been found is known as Kabwe. Its skull has a huge brow ridge. Recent Estimates have given dates that range from 600,000-125,000 years ago. Bodo is also another premodern fossil that has an almost complete cranium. Bodo has cut marks on his cranium which indicate that other hominins defleshed him. The reason for this is still unknown, but it may have been related to cannibalism.

My Zoo Visit

My zoo trip went really well it was the first time going in a while so I was excited to see all the primates. Which I did, I got around to seeing all the animals which was interesting and helped give a real-life picture to everything I have been learning in Anthropology class. The weather was perfect so all the animals were well and doing what they normally do on a daily basis. I saw how all the primates were acting and it was fascinating, after reading all about it in my book seeing it coming to life was great. The gorillas were my favorite part of the whole trip because I saw them eat and walk around. I even saw one of them urinating and it was funny. I also loved the caged monkeys because they were running around and playing with each other. I really got to visualize how they acted and what they looked like because they did not have many places to escape too. I remember going as a kid and not really understanding much just watching so this experience was a lot different. Since I was much more educated and understood a lot more about these primates. It made going to the zoo all the more thrill-seeking because I got to apply my knowledge to real life. It was an all in all good experience and I will definitely be back again so I can keep learning about these amazing creatures.

Conclusion

Throughout millions of years, we are able to see the evolutionary changes made from Epoch to Epoch. The world has been constantly changing for a lot of reasons and that meant that the animals living in this planet needed to adapt to these changes. These distinct changes were made so primates can adapt to major changes that have been made to the earth’s environment. The animals that were able to adapt went on while other animals did not make it. I believe that I have proven conclusively that my thesis was correct.