Biologists find 'evolutionary bite' in prehistoric mammals

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VICTORIA, Australia/SEATTLE, Wash., USA: Teeth could be one of the reasons that certain kinds of mammals were able to survive the dinosaurs. A recent discovery by researchers from Australia, Finland and the US found that the advanced shape of molars in multituberculates helped the prehistoric mammals to live through the mass extinction event that eradicated most of the earth’s wildlife more than 60 million years ago.

By analysing over 40 teeth donated by palaeontologists from all over the world through 3-D software developed by Dr Alistair Evans from Monash University near Victoria, Australia, they found that in contrast to their evolutionary relatives, multituberculates were anatomically able to consume plants that emerged approximately 90 million years ago during the late Cretaceous period. The more diversified diet not only allowed them to grow in size and number, but also gave them a significant advantage over other mammals with more primitive teeth that had to compete with dinosaurs for the same food resources.

Evans, who began his research in cooperation with University of Washington biologist Greg Wilson in 2007, told Dental Tribune Asia Pacific that the study’s findings confirm recent theories proposing that certain mammals were able to diversify while living alongside non-avian dinosaurs. He said that the findings could clarify a number of theories about the evolution of man.

“We can’t really know how the history of the rest of mammals would have been different if multituberculates had not had a similar adaptive radiation. Multituberculates are on a very different branch of the evolutionary tree to humans so there would not be any direct relationship between their evolutionary history and ours,” Evans said. “Whether their evolutionary trajectory affected our long-distant ancestors is also great speculation, but it all happened a long time before humans or hominids evolved.”

According to evolutionary research, multituberculates died out approximately over 50 million years ago during the early Oligocene period. Scientists speculate that they might have been outcompeted for food by other mammals like rodents and primates, the predecessors of contemporary humans.

The Cretaceous-Tertiary extinction event that eradicated the dinosaurs is also subject to scientific speculation. Most accepted theories include the impact of a large meteoroid, climate change through increased volcanic activity, and the spread of viruses.

An artist’s conception depicts a multituberculate in its natural habitat at the time of the dinosaurs. (DTI/Photo courtesy of Burke Museum of Natural History and Culture/Jude Swales, USA)