Chomper

Juvenile Tyrannosaurus Rex Skeleton

Maastrichtian age, Late Cretaceous Period

(68-66 million years ago)

Montana, USA

Fossilised Bone

A rare juvenile Tyrannosaurus rex skeleton, one of only a handful of complete examples known. The skeleton is approximately 55% complete and, most importantly, has a skull that is over 90% complete. This is an extremely good state of condition for this kind of skeleton. Our understanding of the T. rex species, which roamed the earth during the Maastrichtian age of the Late Cretaceous period, around 68 to 66 million years ago, has been greatly expanded through study of juvenile skeletons.

In 1942, palaeontologists from the Cleveland Museum of Natural History excavated a small tyrannosaurid skull in southeastern Montana. As the skull was evidently from a carnivorous dinosaur but was significantly smaller than a fully-grown T. rex (the only large carnivore from that region), the skull was denominated as 'Nanotyrannus', or 'very small tyrannosaur' in 1988. Two further small tyrannosaur skeletons were discovered in Montana in the early 2000s, both approximately six feet tall and twelve feet long: 'Jane' (BMRP 2002.4.1) and 'Petey' (BMRP 2006.4.4). These discoveries sparked an ongoing debate as to whether Nanotyrannus truly was a distinct species; morphological skull features of the two new skulls had much in common with undisputed juvenile individuals of other tyrannosaurids. At present, the scientific community is mostly in agreement that the skeletons represent juvenile T. rex. A groundbreaking study, published in 2020 and headed by Holly N. Woodward, analysed the growth rings within femur and tibia bones sampled from the skeletons, to confirm that the specimen were still growing at their time of death.1 Rather than a separate species, these skeletons most likely represent a distinct ontogenetic stage of a juvenile, or sub-adult, Tyrannosaurus rex.

Woodward's study found that juvenile T. rexes grew in large, inconsistent growth spurts, growing quickly

when food was plentiful, and stopping growth altogether when it was not.2 At the peak of their growth spurt (between the ages of 14 and 18), T. rexes grew as much as 2.1 kilograms per day. Their exceptionally rapid growth compared to other dinosaurs – a juvenile T. rex outgrew Albertosaurus and Gorgosaurus at around the age of 12 – gave them an advantage over other species, as they quickly grew out of their young and vulnerable stage. Over a span of about 5 years, their body mass more than doubled.

Hatchling and juvenile T. rex are now believed to have been clad in feathers, which they mostly lost as they reached maturity, retaining only a few on their heads, spines, and tails.3 These feathers provided warmth and camouflage to the younger rexes, to protect the hatchlings and aid the juveniles as they developed their hunting skills.

While adult T. rex walked to stalk their prey before crushing them in their heavy, bone-crunching jaws, juveniles were smaller, faster, and more agile. Juvenile T. rexes had big feet and proportionally larger legs and arms than their adult counterparts, with estimates suggesting they may have run as fast as 20-30 miles per hour. They also had a more open shoulder socket than adults, indicating they could potentially have had a wider range of arm movement to capture or manipulate prey. Their bladelike teeth are also significantly different to the large, blunt dental crowns of adults, and better adapted to precision bites and cutting through flesh. A 2019 study found that juvenile T. rex teeth were still capable of puncturing bone, and could exert up to 5,641 newtons of force. Comparatively, a human has about 300 newtons of biting power and an adult T. rex can bite down with a force of around 35,000 newtons.4 It is now theorised that juvenile tyranosaurids may have outcompeted other medium-sized predators and driven them to extinction.5 Juvenile T. rex may, therefore, have dominated their ecological niche with the same ruthless efficacy as the fully-grown dinosaurs.

Exhibitions

Frieze Masters, London,October 2023

Literature:

Video

Rancher Finds T-Rex Bones That Turn Out To Be A Brand NewDinosaur Species!, Dino Hunters, Discovery Chanel. Youtube

Press

The Art Newspaper, Baby T rex at Frieze Masters seeks new home-for $20m, October, 2023.

Artnet, A Juvenile T-Rex Skeleton Nicknamed Chomper Towers Above the Art at Frieze Masters This Week. Its Price? $20 Million, October 2023.

ArtsLife, C'è anche un cucciolo di T-rex tra gli stand di Frieze Masters. Il prezzo? 20 milioni di dollari, October, 2023.

FAD, FRIEZE MASTERS TOP 10, October, 2023.

Galerie, See the Most Significant Historical Treasures at This Year's Frieze Masters, October, 2023

FRIEZE (online), In Pictures, Frieze Masters 2023, October 2023

Bloomberg, Crowds of Jittery Rich Fill Frieze London Art Fair's Opening Day, October 2023

Evening Standard (London), London Salutes 20 Years of big Frieze, October 2023