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| Diplodocus carnegii | Vs | Tyrannosaurus rex |
| You pronounce their name dip-LOW-doe-kuss. The meaning of their name is 'double beamed lizard'.  Four species are recognized: D. longus, D. carnegii, D. hayi and D. hallorum (previously known as Seismosaurus). | **Names** | Tyrannosaurus means 'Tyrant Lizard'.  "tyranno" means tyrant in Greek; "saurus" means lizard in Greek, and "rex" means "king" in Latin.  Tyrannosaurus has only one species: T. rex. But if you, like Gregory Paul, consider Tarbosaurus and Zhuchengtyrannus to be junior synonyms of Tyrannosaurus, and thinks the fossils attributed to T. rex actually represent three or more species, you have at least 5 species of Tyrannosaurus. |
| They lived about 154 to 150 million years ago - in the late Jurassic period. | **When they lived** | T. Rex lived about 65 to 70 million years ago - in the late Cretaceous period. The first tyrannosaurs, which were human- to horse-size, originated about 170 million years ago during the mid-Jurassic. |
| They are the longest known dinosaur. | **Record breakers** | T. Rex were one of the biggest meat eaters. T. rex had the [strongest bite of any land animal that ever lived](https://www.livescience.com/18718-trex-strong-bite.html), according to a 2012 study in the journal Biology Letters. The dinosaur's bite could exert[up to 12, 814 pounds-force (57,000 Newtons)](http://rsbl.royalsocietypublishing.org/content/8/4/660), which is roughly equivalent to the force of a medium-size elephant sitting down. |
| Their length was up to 27 metres (88 feet). | **Size** | Tyrannosaurus Rex were 12 metres (40 feet) in length. |
| They weighed about 12 tons (as much as a large truck). They weighed from 10 to 15 tons - as much as a large truck. Although heavy, they were not the heaviest dinosaur. The Brachiosaurus weighed around 30 tons! | **Weight** | T. Rex weighed 5 tons. T. Rex were one of the biggest carnivorous (meat eating) dinosaurs, but not the biggest! [Giganotosaurus](https://www.kids-dinosaurs.com/giganotosaurus.html), Spinosaurus and Carcharodontosaurus were bigger. |
| They had a very small head compared to the size of its body and would have had a very small brain, so were not very clever. Their size would also have been a deterrent to predators. Like some other sauropods, Diplodocus' nasal openings sat high up on its forehead instead of at the end of its snout. | **Heads** | Their heads were over 4 feet (1.25 metres), with quite a large brain for a dinosaur. This would have helped it hunt better! Large parts of its brain helped its vision and smell - it may have even had telescopic vision.  Dinosaurs and other animals are seldom given credit for having enough intelligence to be capable of the co-operative behaviour found in many mammals, but this is simply not the case. Also along the skull of the giant dinosaur are several pronounced bumps. Some researchers have suggested the protuberances are an indication of additional armour or horn like growths. It turned out the nodes on the dinosaur were more like those on lizards and crocodiles, which don’t have horns. |
| We currently think it sounds like a low growl:  <http://www.nhm.ac.uk/take-part/dippy-on-tour/jurassic-sounds.html> | **Sounds** | T. rex probably didn’t have a Jurassic Park lion-like roar, but it also didn’t chirp like a bird. Best guess is something akin to a crocodile’s bellow.  <https://www.telegraph.co.uk/science/2017/12/09/sinister-sound-tyrannosaurus-rex-heard-first-time-66-million/> |
| They were plant eaters (herbivores) with peg like teeth that look like incisors (teeth at the front of your mouth). The teeth were slender and delicate, and replaced very quickly. Diplodocus had a tooth-replacement rate of one tooth every 35 days.  Their teeth were perfect for stripping the leaves from ferns, trees, bushes, cycads and gingkoes.  Because it had no teeth in the back of its mouth for chewing, scientists think it swallowed stones to help grind up and digest its food. We now know that rather than chewing, Diplodocus spent a considerable time fermenting its food in its expanded gut, and probably didn’t need to swallow stones. | **What they ate?** | T. rex had very powerful jaws and had 8 inch (20cm) teeth that indicate they not only meat eaters (carnivores) but were a top the food chains of the time, as an apex predator.  Specifically, the dinosaur's front teeth gripped and pulled; its side teeth tore flesh, and its back teeth diced chunks of meat and forced food into the throat. Importantly, T. rex's teeth were wide and somewhat dull (rather than being flat and daggerlike), allowing the teeth to withstand the forces exerted by struggling prey, the study found..  The largest T. Rex tooth found is 12 inches (30 cm) long! Teeth were replaced when they were lost.  T. rex hunted prey such as Hadrosaurs and [Triceratops](https://www.kids-dinosaurs.com/dinosaurs-triceratops.html). [direct evidence of T. rex's predatory nature](https://www.livescience.com/38182-tyrannosaur-tooth-in-hadrosaur-tail.html) includes [a T. rex tooth embedded in a duckbill dinosaur's tailbone](http://www.pnas.org/content/110/31/12560.short), which healed over the tooth (meaning the duckbill got away).  They would have also scavenged - stealing meals from smaller predators. Recently, evidence has been found that T.rex cannibalised smaller T. Rex, but it's not clear if the cannibalistic dinosaurs fought to the death or merely ate the carcasses of their own kind.  T rex could digest chunks of flesh and even bones in their stomachs. We know some of what it ate because of the poop; 50 percent of it was bone! |
| Diplodocus had a thin long and relatively inflexible neck. The neck could reach over 6m (20ft) and its long tail had 80 vertebrae. It was first thought they could reach high in the trees to eat the vegetation but scientists now think that it would have not been able to lift it's head much higher than its body. | **Necks?** | T rex had a muscular and flexible neck to adjust the angle of attack, it didn’t need arms. The king of dinosaurs needed thick neck muscles to hold up its large skull and power its forceful bite. Neck and arms muscles compete for space in the shoulder, and it appears that the neck muscles edged out the arm muscles in T. rex's case. Moreover, long arms can be broken, are vulnerable to disease, and take energy to maintain, so having short arms may have been beneficial to the king in the long run. |
| Diplodocus had very 4 powerful back legs to support its weight! Its front legs were shorter than its back legs. The low-slung, ground-hugging posture of this sauropod lends weight to the theory that Diplodocus browsed on low-lying shrubs and bushes rather than the tops of tall trees, though there might be another reason for this adaptation (perhaps having to do with the tricky demands of [Diplodocus sex](https://www.thoughtco.com/how-did-dinosaurs-have-sex-1091908), about which we know very little).  Even if the dinosaur couldn't lift its head up very high, it could still rear up on its hind legs to reach the top of tall trees Scientists initially thought that Diplodocus' posture was more lizard-like, with splayed limbs, but we now know they were more like an elephant’s legs. | **Movementt?** | T rex walked upright on two legs. Tyrannosaurus Rex had powerful back legs that let it hunt prey over short distances. |
| The dinosaur's large tail placed its centre of mass pretty far back on its body, and with it’s centre of mass is so far back that it wouldn't have been able to walk very quickly, something like speeds up to 9mph (15kph). It is thought that some dinosaurs may have migrated significant distances, notably those living near the Earth's poles, where food supplies were seasonal. Suggestions of how far they travelled vary, but one recent study estimated large sauropods might have made a 1,800-mile round trip each year. | **Speed?** | T rex walking at speeds up to 20mph (32 kph). We used to think T. Rex ran after its prey, but it was unable to run as couldn’t support its own body weight on a bent leg, instead, would walk- but an animal that size could cover a lot of ground quickly. |
| Its body was balanced by a long heavy tail. We now think that Diplodocus could [whip the tips of their tails at supersonic speeds](http://paleobiol.geoscienceworld.org/content/23/4/393.abstract), producing a canonlike boom, possibly to intimidate would-be attackers or rivals, or for communication and courtship. It was first thought that the tail dragged along as it walked - but no drag marks have been found beside. So a lot of the earlier drawings of this dinosaur with its head at tree level and its tail on the floor would be wrong. | **Tail?** | Its body was balanced out by a large tail, which it used as a counterweight. |
| In the late 1990s, two adult and one juvenile Camarasaurus specimens were found together in the United States, indicating that these sauropods travelled in family groups and possibly herds. | **Solitary or groups?** | We used to think T. Rex were solitary hunters. There is now compelling evidence to support the theory that millions of years before mammals evolved to become organised hunters, Tyrannosaurids may have been living and working together and hunting in teams – a very frightening prospect for any unwary herbivore around at the end of the Cretaceous. Researchers found dinosaur track marks in the foothills of the Canadian Rockies in British Columbia — out of the seven tracks, three belonged to Tyrannosaurids, most likely [Albertosaurus](https://www.livescience.com/44090-mini-trex-discovered.html), Gorgosaurus or Daspletosaurus. |
| If you compare dinosaurs to present-day animals, we might expect that the very large herbivores - things like brachiosaurs and Diplodocus, which were comparable in size to an elephant - would have lived, therefore, for 70-80 years; maybe a bit more. | **Lifespan?** | If you think of something like an eagle or raven, they live for 20-30 years, and that would probably have been the lifespan of a T. rex. The largest and best-preserved T. rex (Sue) in the Field Museum of Chicago, is thought to have lived to almost 29 years, although it would have achieved adult size after 20 years. Our T. rex cast is of a teenager and had not achieved its full potential size. |
| Like other sauropods, Diplodocus probably grew very quickly, reached sexual maturity at about 10 years of age, and continued to grow throughout life.  No direct evidence of Dipolodocus' nesting habits exists, but it's possible the dinosaur, similar to other sauropods, laid its eggs in a communal area containing vegetation-covered shallow pits. Given its enormous size, it's extremely unlikely that a healthy, full-grown, 25-ton Diplodocus would be targeted by predators—even if, say, the contemporary, one-ton [Allosaurus](https://www.thoughtco.com/things-to-know-allosaurus-1093771) was smart enough to hunt in packs. Rather, the theropod dinosaurs of late Jurassic North America would have targeted the eggs, hatchlings and juveniles of this sauropod (one imagines that very few newborn Diplodocus survived into adulthood), and would only have focused their attention on adults if they were sick or elderly, and thus more likely to lag behind a stampeding herd. | **Lifecycle?** | The growth lines also offer a guide to a dinosaur's growth rate at different stages of its life. It is now understood that most dinosaurs grew for a large part of their lives, with a particularly rapid spurt during adolescence. No one has found a T. Rex nest yet. |
| [Fossilized skin impressions](http://geology.gsapubs.org/content/20/12/1068.abstract) described in a 1992 Geology paper suggest that diplodocids may have had small, keratinous spines along their tails, bodies and necks. | **Skin- spines, feathers?** | No one has found a fossil feather on a T. rex, but we’ve found more relatives of T. rex with feathers, so we can infer it. As for fossilized skin, the big issue with it is it’s likely coloured by melanin and keratin, and keratin can range from purple to orange to red. The trick is knowing how well it is preserved (or is degraded) over thousands of years in order to judge what colour a T. rex might have been 70 million years ago. Until we know those rates, we can’t say with any precision whether the scale-like skin of T. rex was orange or brown. A lot of exciting progress has been made in the area of colour thanks to chemical analysis. That’s how scientists have been able to determine that some dinosaur eggs were coloured, and it’s how researchers discovered a banding pattern in the feathers of other dinosaurs. |
| From fossilized skeletons and other fossilized evidence such as footprints, we know that they lived in North America. [Fossilised](https://en.wikipedia.org/wiki/Fossil) remains of of other sauropods have been found on every continent, including [Antarctica](https://en.wikipedia.org/wiki/Antarctica). | **Where they lived** | From fossilized skeletons and other fossilized evidence such as footprints, we know that they lived in North America. Tyrannosaurs may have lived all over the world - and that more Tyrannosaurus remains or [skeletons](https://www.kids-dinosaurs.com/dinosaur-skeletons.html) may be discovered in Africa, South America and India. |
| Its [dinosaur suborder](https://www.kids-dinosaurs.com/dinosaur-classification.html) is Sauropoda ("lizard-footed"). Sauropods had very long necks, long tails, small heads (relative to the rest of their body), and four thick, pillar-like legs. They are notable for the enormous sizes attained by some species, and the group includes the largest animals to have ever lived on land. Well-known [genera](https://en.wikipedia.org/wiki/Genus) include [Brachiosaurus](https://en.wikipedia.org/wiki/Brachiosaurus), [Diplodocus](https://en.wikipedia.org/wiki/Diplodocus), [Apatosaurus](https://en.wikipedia.org/wiki/Apatosaurus) and [Brontosaurus](https://en.wikipedia.org/wiki/Brontosaurus). | **Grouping?** | T. rex is classed as a theropod. Theropods are a [dinosaur](https://en.wikipedia.org/wiki/Dinosaur) suborder that is characterized by hollow bones and three-toed limbs. Theropods were ancestrally [carnivorous](https://en.wikipedia.org/wiki/Carnivore), although a number of theropod groups evolved to become [herbivores](https://en.wikipedia.org/wiki/Herbivore), [omnivores](https://en.wikipedia.org/wiki/Omnivore), [piscivores](https://en.wikipedia.org/wiki/Piscivore" \o "Piscivore), and [insectivores](https://en.wikipedia.org/wiki/Insectivore). All [carnivorous](https://en.wikipedia.org/wiki/Carnivore) dinosaurs (certain types of [theropods](https://en.wikipedia.org/wiki/Theropod" \o "Theropod)) are traditionally classified as saurischians, (as are all of the [birds](https://en.wikipedia.org/wiki/Bird) and one of the two primary lineages of [herbivorous](https://en.wikipedia.org/wiki/Herbivore) dinosaurs including diplodocus). |
| Sauropods are now all extinct. Sauropods were long thought to have fallen into rapid decline at the end of the Jurassic period, around 145 million years ago—pushed to the evolutionary sidelines by new herbivorous dinosaurs, the [titanosaurs](https://en.wikipedia.org/wiki/Titanosaur), better adapted to the changing world. | **Extinct?** | In the [Jurassic](https://en.wikipedia.org/wiki/Jurassic), [birds](https://en.wikipedia.org/wiki/Bird) evolved from small specialized [coelurosaurian](https://en.wikipedia.org/wiki/Coelurosauria" \o "Coelurosauria) theropods, and are today represented by about 10,500 living species. |
| The first Diplodocus fossil was found near Cañon City, Colo., by Benjamin Mudge and Samuel W. Williston in 1877, and was named by Marsh in 1878. Thanks to steel magnate Andrew Carnegie, who donated casts of complete skeletons to various European monarchs, Diplodocus is among the most displayed dinosaur. Diplodocus can been viewed at a number of museums worldwide. | **First discovered?** | Fossil hunter Barnum Brown [discovered the first partial skeleton of a T. rex](https://www.livescience.com/37817-t-rex-skeleton-headed-for-smithsonian.html) in the Montana portion of the Hell Creek Formation in 1902. He later sold this specimen to the Carnegie Museum of Natural History in Pittsburgh.  T. Rex is the dinosaur that has arguably received the most media exposure. It had a starring role in the "Jurassic Park" movies. |
| This skeleton is a cast made up from 2 examples that was on display in the Natural History Museum in London. It is a replica of the near-complete D. carnegii fossil discovered in 1898. In early 2015, London's Natural History Museum announced that it would be replacing its iconic Dippy —— with a model of a blue whale, the largest animal known to ever exist on Earth. | **Display example?** | This skeleton is a cast made up from a complete example named the Wankel Rex, after their finder Kathy Wankel, and is currently called the nation’s Rex. The original is on display in the Smithsonian Museum in America. At the Museum of the Rockies, there is a statue of this specimen called Big Mike and that is how we often refer to our cast (although we don’t know whether it is male or female). |