

CASE STUDIES OF DINOSAURIA

- **Olfactory lobes:** are part of the brain that can process smell. The larger this area, the acuter the sense of smell.
- **Sauropoda:** is a division of the Saurischia, 'reptile-hip' dinosaurs. Characterized by their large sizes, long-necks/tails and a herbivorous diet.
- **Theropoda:** is a division of the Saurischia, 'reptile-hip' dinosaurs. Characterized by hollow bones and three-toed limbs.
- **Bipedal:** means to walk on two hind legs.
- **Quadrupedal:** means to walk on all four legs.
- **Ornithopoda:** is a division of the Ornithischia, 'bird-hip' dinosaurs. Characterized by their highly sophisticated chewing apparatus and a herbivorous diet.
- **Pubis:** is the pubic bone.

PHYLUM: CHORDATA, CLADE: DINOSAURIA, ORDER: SAURISCHIA, CLADE: SAUROPODA, GENUS: DIPLODOCUS

Diplodocus was a **Sauropod** herbivore common in the **Jurassic and the Cretaceous** {Mesozoic}. It lived from Jurassic - Cretaceous

The skull is **long and slender** in comparison to the rest of the body

Peg-like teeth are only found at the **front** of the jaw. Unlike, most herbivores that had teeth differentiated into grinding and tearing teeth. This suggests that **Diplodocus bit off vegetation (striping off leaves) and swallowed**



The long neck was carried parallel to the ground.

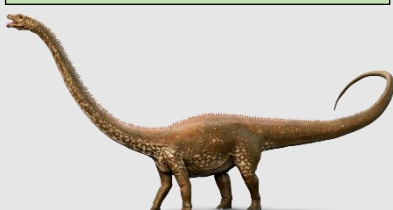
A **long S-shaped neck** to reach for **vegetation in forests** which they could not enter **due to their size**. The neck also allowed for grazing of a large area. Moreover, it could use the long neck to search for **foliage in wetlands**.

Most other Sauropods could not eat vegetation from forests due to their size, making this a successful competitor.

Swallowing vegetation whole would make digestion particularly difficult. It is thought that Diplodocus would have utilised **stomach bacteria** and swallowed stones (**gastroliths**) to aid the digestion of food.

The spine had extra bones beneath it, these bony protrusions ran both forward and backward (anvil shaped), providing support and extra mobility of the neck and tail. The anvil-shaped bones are under the pelvis.

The long whip-like tail may have been used for defence.



Diplodocus would have moved herds. It was quadrupedal.



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PHYLUM: CHORDATA, CLADE: DINOSAURIA, ORDER: SAURISCHIA, CLADE: THERAPODA, GENUS: TYRANNOSAURUS

Tyrannosaurus was the largest of all terrestrial predators. It was a **Therapod carnivore** and walked the Earth in the late Cretaceous.

Evidence for Tyrannosaurus being a **scavenger**:

1	Small eyes were not ideal for spotting and hunting prey.
2	It had small arms , not suitable for grasping prey.
3	The back legs were huge , indicating possible slow movement . This does not make hunting easier. These large legs showed the Tyrannosaurus was capable of walking large distances , a characteristic of a scavenger.
4	The Tyrannosaurus had large olfactory lobes , another adaptation to scavenging .

Evidence that Tyrannosaurus was an **active hunter**:

1	Many modern predators can scavenge for readily available meat , prefer to hunt for fresh meat .
2	Many predators are successful hunters without the use of their forelimbs .
3	There are few traces preserved and it is difficult to identify which dinosaur they belong to. Therefore, it is difficult to decide if the Tyrannosaurus moved slowly or fast .
4	It could be a scavenger, hunter or both . It was definitely a carnivore as its teeth were relatively large, curved and jagged , making them ideal for tearing flesh from the carcass.



It's large size suggested a predatory lifestyle.



PHYLUM: CHORDATA, CLADE: DINOSAURIA, ORDER: ORNITHISCHIA, CLADE: ORNITHOPODA, GENUS: IGUANODON

Iguanodon appeared in the late-Jurassic, in a class called **Ornithopoda**.

It was a **large, heavily built** creature with **heavy shoulders** and **forelimbs**.

Its skull was **large** with a **horse-like snout** ending in a **horny, toothless beak**, used to **crop vegetation**.

It could then **mince its food** using its **hinged upper jaw** which was able to flex from side to side, with a **long series of leaf-shaped cheek teeth** (resembling the teeth of living iguanas).

The upper teeth could grind down on the lower as it bit through hard vegetation.

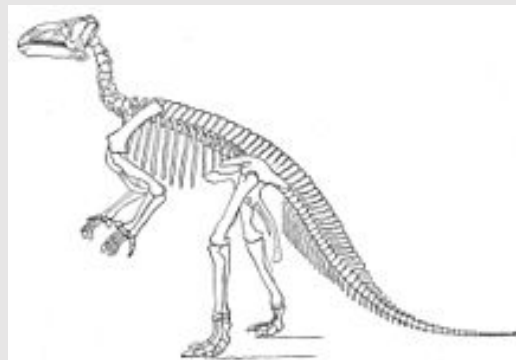
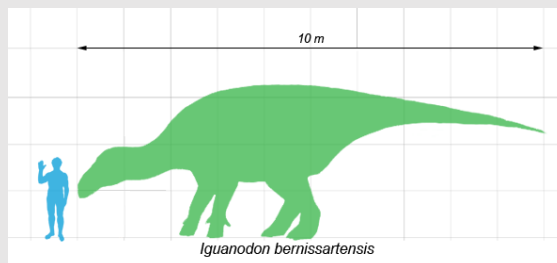
Its hands had **3 digits (fingers)**, which **ended in hooves** and had **large, conical thumb spike**, thought to be a weapon or used to **obtain food**.



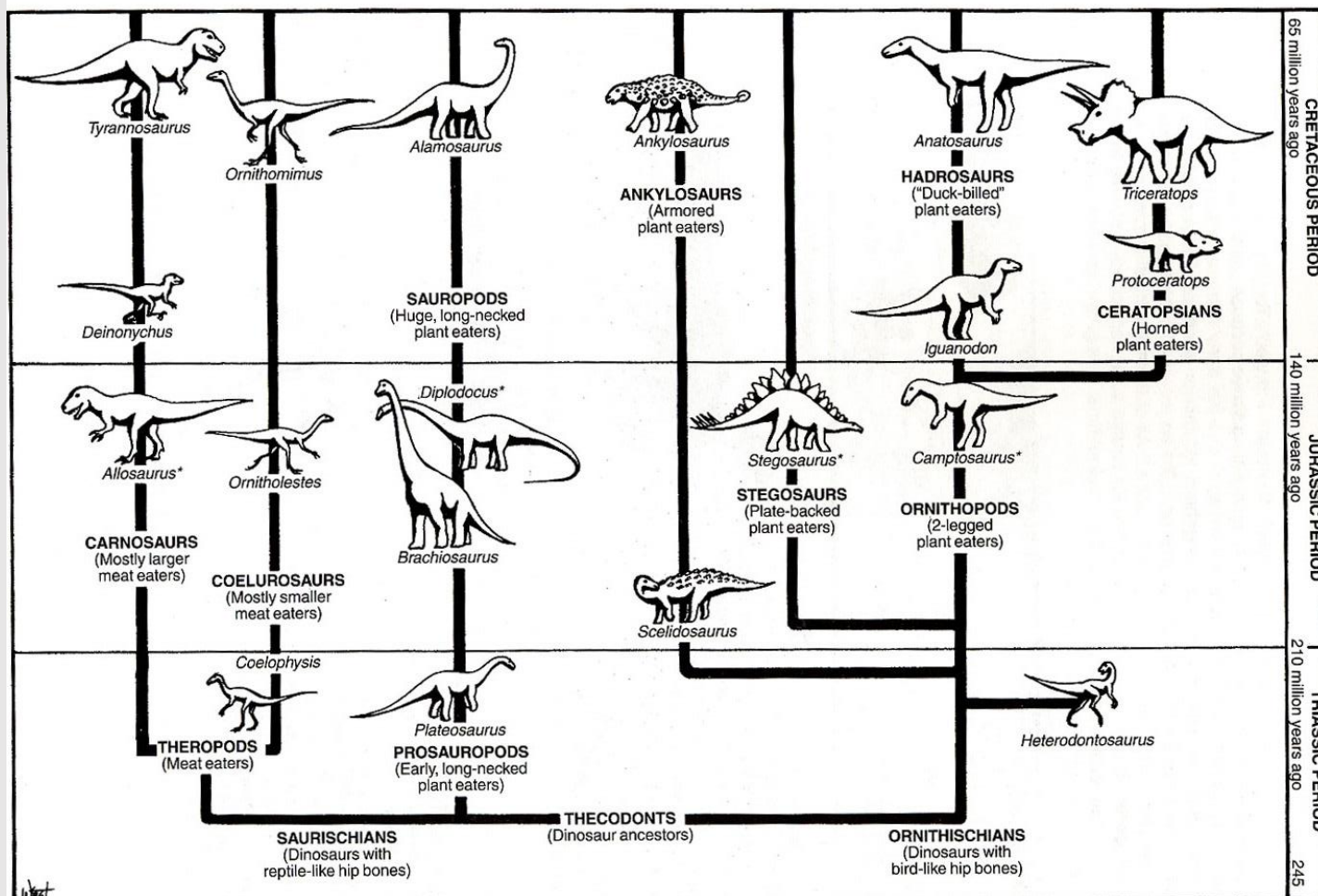
Iguanodon had a unique feature. It could be not only **quadrupedal**, using its **tail as a counterbalance**, but also **bipedal**, to run or to rear up and swing its spike-like thumb in defence.

Summary:

1. Late Jurassic to Late Cretaceous
2. Herbivorous
3. Part of the duck-billed dinosaurs
4. Classic/infamous **thumb spike**, for **digging/defence**.
5. **Quadrupedal** when walking but **bipedal** when running
6. Capable of **leaning back on its tail** to reach **high branches**
7. Moved in **herds**



THE DINOSAUR FAMILY TREE



* Fossils found in the the Dinosaur National Monument Quarry