# Giant dinosaur bones get paleontologists rethinking Triassic period

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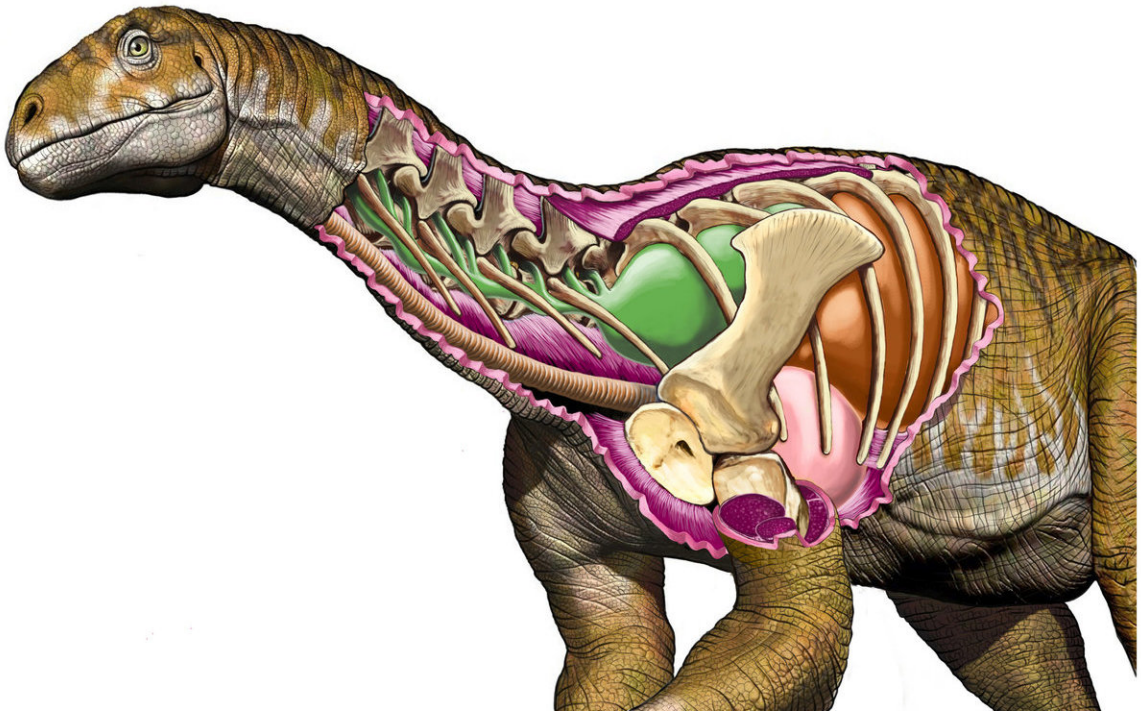


Reconstruction of the sauropodomorph dinosaur Ingentia prima showing an improved avian-like respiratory system with developed cervical air sacs (green structure). Lungs in brown colour. Credit: Jorge A. González

Giant dinosaurs lived on Earth much earlier than previously thought, according to a team of excavators in Argentina who discovered the remains of a 200-million-year old species.

The species, baptized Ingenia prima, was about three times the size of the largest Triassic dinosaurs from its era. It was discovered in the Balde de Leyes dig site in San Juan province, 1,100 kilometers (680 miles) west of the Argentine capital Buenos Aires.

The find was published in the specialist *Nature Ecology & Evolution* journal on Monday and revealed in Argentina by San Martin University's Scientific Dissemination Agency.

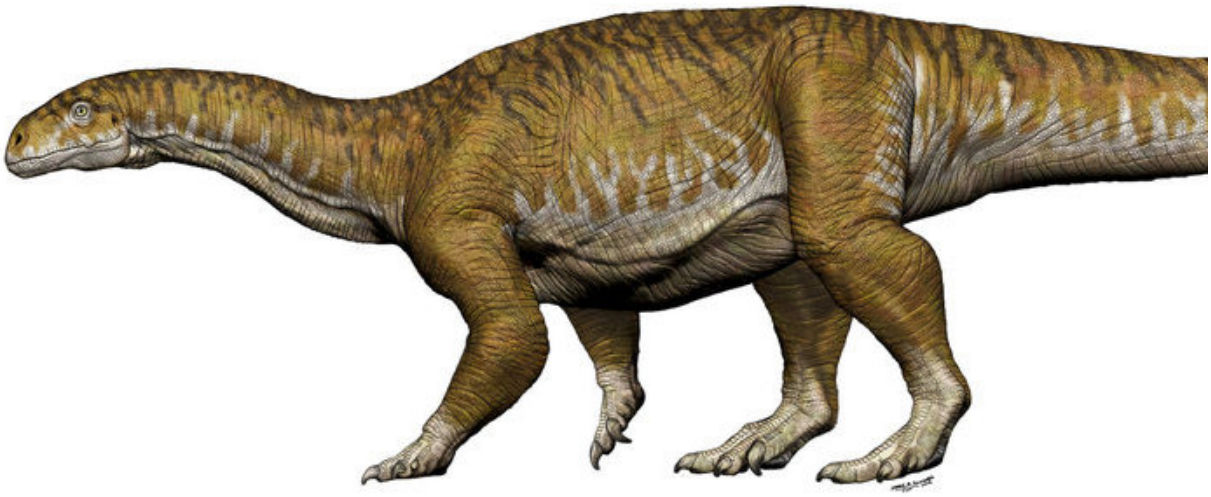
"As soon as we found it, we realized it was something different. We found a shape, the first giant one among all the dinosaurs. That's the surprise," said Cecilia Apaldetti, a government and San Juan University researcher.

Excavators found several vertebrae from the neck and tail as well as fore and hind leg bones.

The species "exhibits a growth strategy that was unknown until now and indicates that gigantism originated much earlier than was thought," said Apaldetti, the study's co-author.

These were "herbivore dinosaurs, quadrupeds, easily recognizable by their very long neck and tail, and from the sauropod group," she added.

Before this discovery, it was thought that gigantism developed during the Jurassic period, around 180 million years ago.



Reconstruction of Ingentia prima from the Late Triassic (205- 210Ma) of Argentina. Total length 8-10 metres. Credit: Jorge A. González

## Late Triassic

Fellow co-author Ricardo Martinez believes the Ingenia prima is from "a Late Triassic period, possibly 205 million years" ago.

The Triassic period extended from around 250-200 million years ago and the Jurassic from 200-145 million years ago.

The team has been studying the Triassic period, when dinosaurs were just beginning to appear. The first ones were small but as they evolved they tended towards gigantism to defend themselves against predators.

According to scientists, Ingenia prima was the first dinosaur species to reach gigantism and even though it was a long way from the 70 tonnes

that the biggest sauropods weighed from the end of the Cretaceous period (145-66 million years ago), the speed of bone tissue accumulation was greater than that of species from its era and the biggest giants that lived in Patagonia, in the south of Argentina.

The dinosaur's bone fragments displayed cyclical and seasonal growth, with a different kind of tissue to other sauropods, which allowed it to grow very quickly.

It's believed that the species grew to eight to 10 meters (26-33 feet) tall—the specimen found was a growing youth measuring six to seven meters—and weighed around 10 tonnes, equal to two or three African elephants.

Another of the species' features was air cavities in its bones, making it lighter and promoting growth.

The Balde de Leyes site, which spans several thousand hectares (acres), was first discovered in 2001 and since 2014 has produced hundreds of specimens. At the end of the Triassic period it was a type of savannah.

**More information:** Cecilia Apaldetti et al. An early trend towards gigantism in Triassic sauropodomorph dinosaurs, *Nature Ecology & Evolution* (2018). DOI: 10.1038/s41559-018-0599-y