

Big bang theory: How did dinosaurs have sex?

July 16 2013, by John Long



Debate continues over how dinosaurs did the deed. Credit: Miroslav Petrasko (blog.hdrshooter.net)

Dinosaurs were the largest animals to ever walk Earth, and they ruled the planet for more than 160 million years. The long-necked [Argentinosaurus](#), with back vertebrae almost two metres high, possibly grew to 30 metres long and weighed up to 80 tonnes. So did the earth really shake for them when they mated?

The real question here though is: how did they really mate and what evidence do we have to reconstruct their sex lives?

The internet offers vague speculation. One website claims they probably didn't have penises so must have used cloacal kissing, juxtaposing their massive bottoms together for the interchange of [seminal fluid](#) to the female, as do most frogs and many birds.

I disagree with this view, as evidence from living animals, close relatives of [dinosaurs](#), implies they must have mated using copulation, and that the male must have had very large and flexible penises.

We now know with confidence that the meat-eating theropods, such as Tyrannosaurus and kin, were the group that gave rise to the first birds about 160 million years ago.

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This is established from a large number of exquisite fossils showing various [feathered dinosaurs](#) and early dinosaur-like birds from sites in northern China.



Credit: Ainvar Photography

Crocodiles and their kin evolved from the last common ancestor of the dinosaur-[bird group](#), so crocs can't be regarded as "descendents of the dinosaurs" as some crocodile park ads would have us believe.

All male [crocodiles](#) have a penis and most primitive living birds also possess one, so it follows that dinosaurs must also have had a penis. The majority of living birds though have secondarily lost the penis. For them a mating is a simple, quick cloacal kiss where sperm is rapidly passed to the female.

Once all the fancy dancing and singing is done, the [sexual act](#) can be over in a second or less in some birds, such as dunnocks, shown in the video below:

So how did the dinosaurs do it? Biomechanics experts such as Professor McNeill Alexander of The University of Leeds claim that the weight of the male would have rested on the females hips to mount from behind [as elephants do](#), but the resulting stresses would have been massive.

Professor Roger Seymour from the University of Adelaide studied giraffes mating (see video below) and proved that the male's blood pressure is roughly twice that of other mammals. Their hearts need be proportionately 75% larger due to the physiological constraints of the long neck and highly perched head.

Bearing this in mind, he suggested that, for long-necked dinosaurs, they could only have mated in a particular way. A dinosaur with, say, a ten-metre-long neck would have seven times the normal mammalian blood pressure. So rear mounting is not a big problem if one keeps the neck horizontal.

Just imagine a 70-tonne giant sauropod fainting after loss of [blood pressure](#) to the head at the time of orgasm while mounting its mate. Yes, the earth would have most certainly shaken for them.

New clues

Recent molecular studies of the major bird groups find that the ostriches and other primitive flightless birds are indeed the most ancient members of the living birds, with ducks and geese and some other waterbirds also very old lineages.

All these primitive living birds possess a penis, with ducks having the most bizarre types – a regular sized Argentine lake Duck has a corkscrew-shaped organ with a brush on the tip that measures up to 42 cm long.

Muscovy ducks can also explosively evert their penises in 0.3 second to 20 cm long – roughly the same speed as driving at 70kph – as can be seen in the video below:

So, it's quite likely their distantly extinct ancestors, the meat-eating theropod dinosaurs also mated using an eversible penis, most likely a terrifyingly large one.

For an animal the size of Tyrannosaurus (14 metres long) to mate effectively the male organ would need be in the order of at least two metres long, and maybe a lot more if it happened to be cork-screw shaped like a duck's.

It's not unlikely that one day palaeontologists will find a fossilised dinosaur penis. Extraordinary soft-tissue preservation in fossils are coming to light each year along with new fossil sites being discovered.

Greater detail can be resolved in fossils using new technologies, such as micro-CT and synchrotron tomography. Recently, 380 million-year-old fossil fishes from Australia were found to have complete sets of muscles preserved.

A small dinosaur fossil found in the spring of 1981 in central Italy, named Scipionyx, revealed excellent soft tissue preservation, with clear impressions of the intestines, liver and some muscles. Such fossils offer hope.

I truly believe the day will surely come, probably when we least expect it, when a remarkable new dinosaur [fossil](#) pops up solving the age old mystery of how dinosaurs really did do the deed.

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