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The scales of reptiles are made of keratin, the same material from which hair, fingernails and feathers are built. Since keratin is found in both scales and feathers, it's possible that there could be some degree of kinship between our chicken cover stars Atta (middle), Rona (right), Coro (left), and a *Tyrannosaurus rex.*

Paleontologist Mary Higby Schweitzer discovered the remains of a 68 million year old *Tyrannosaurus rex* in eastern Montana in 2003. Because its thigh bone could not fit into the cargo helicopter, she decided to cut it into half—and discovered some blood vessels which weren't yet fossilized.[1] Because of this additional find, protein sequences of the *Tyrannosaurus rex's* collagen could finally be traced. When compared to the amino acid sequences of other, still living animals, the results showed some similarities with the peptides of chickens, frogs and salamanders. While frogs and salamanders do not possess feathers, chickens do; and some new research seems to point in the direction of feathered dinosaurs.

While geologist Edward Hitchcock and biologist Thomas Huxley independently observed that dinosaur footprints and bones were alike to that of birds in the early 1800s, it was only when paleontologist Herrmann von Meyer discovered the raven-sized *Archaeopteryx* in 1861 that a proven link between dinosaurs and birds was finally established.[2] The *Archaeopteryx* showed that not all dinosaurs were scaly, and that at least some might have been feathered.[3] This hypothesis has been further supported by the discovery of the first plumed dinosaur, the *Sinosauropteryx*. Approximately 1.25m long and weighting in at 2.5kg, it was discovered by the farmer Li Yumin in 1996 in Sihetun, Liaoning Province, China.[4] Nearly two decades later, in 2012, the excavation of a 145 million year old feathered saurian fossil by paleontologists Xu Xing and Corwin Sullivan in North China led to the assumption that the *Tyrannosaurus rex* might have been covered in feathers as well.[5] The excavated fossil, though, did not belong to a *Tyrannosaurus rex* but to a closely related dinosaur, as the scientists ultimately concluded based on the physical similarities and differences between the two. Xing and Sullivan named this new dinosaur—which weighed an estimated 1.4 tons, way less than the *Tyrannosaurus rex's* assumed weight of 9 tons—*Yutyrannus huali,* which translates into *feathered tyrant*.

In 2017, biologist Phil R. Bell argued that, according to his studies, the differences in body type, weight, and size between the two theropods indicated that the *Tyrannosaurus rex* did not have feathers.[6] Bell argued that the feathers had probably restricted the 1.4 ton *Yutyrannus huali* from being able to take off into the air and were there only for thermal protection. Being up to 13 meters in size and with an assumed weight of 9 tons, a *Tyrannosaurus rex* carried way more body mass than its relative *Yutyrannus huali*. Due to this gigantism, the *T. rex* probably generated enough body heat on its own, which would have made additional thermal insulation from feathers an unnecessary hindrance. This was later proven by Bell through the examination of partly preserved skin of other members of the *Tyrannosaurids* family, the *Gorgosaurus*, *Albertosaurus* and *Tarbosaurus,* all of which were discovered in the U.S. state of Montana. The results showed that *Tyrannosaurus rex* must have had a smooth, scaly skin, at least on its neck, tail and hips.[7]

Bell's study, however, does not contradict the assumption that ancestors of the *T. rex* might have had feathers and shed them in the course of evolution for an increased body size. Various mammals, for instance elephants, rhinos and humans, have also reduced their fur over the course of evolution, and whales have even lost it completely except for a few whiskers.[8]

Maybe this explains why chickens, as indirect descendants of a *Tyrannosaurus rex*, are still covered in feathers. Chickens are considerably smaller than their distant *Tyrannosaurus rex* cousins, and their bodies do not run the risk of overheating because of their feathered clothing. According to the paleobiomechanics expert Pasha van Bijlert's recently published study, *T. rex's* body mass was even such a hindrance that it could only walk at an assumed speed of 3 mph and would have broken its bones under its own weight if it exceeded that speed at 12 mph.[9] This is considerably slower than a chicken's pace, which is able to run 9 mph even while dressed in feathers.[10]

It's possible that the incubation behavior of *Tyrannosaurus rex* and chickens differed as well, and it's said that the *Tyrannosaurus rex* may have buried its eggs rather than sit on them. Nevertheless, smaller dinosaur species are thought to have incubated their eggs at a temperature ranging usually between 35 and 40°C, similar to chickens' 37.5°C.[11] While it is still uncertain how exactly dinosaurs brooded their eggs, chicks are known to communicate with their mother hen from the 17th day of incubation before hatching.[12] But what exactly they communicate remains unclear.

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