Birds didn't come from dinosaurs, study suggests

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Courtesy Oregon State University and World Science staff

A new discovery about bird breathing abilities indicate birds probably didn't descend from any known dinosaurs, according to researchers at Oregon State University.

The scientists have been waging a lonely battle challenging the conventional scientific wisdom that birds descend from dinosaurs known as theropods, an evolutionary group that included the famous Tyrannosaurus Rex.

Birds more likely share a common ancestor with dinosaurs than descend from them directly, said John Ruben, a zoologist at Oregon State who participated in the new study.

"It's really kind of amazing that after centuries of studying birds and flight we still didn't understand a basic aspect of bird biology," said Ruben. These studies are published in The Journal of Morphology, and were funded by the National Science Foundation.

It's been known for decades that the femur, or thigh bone in birds is largely fixed in place, unlike that in virtually all other land animals, the Oregon State researchers say. What they found, though, is that this fixed position of bird bones and musculature keeps their lung from collapsing when the bird inhales.

Warm-blooded birds need about 20 times more oxygen than cold-blooded reptiles, and have evolved a unique lung structure that allows for a high rate of gas exchange and high activity level. Their unusual thigh complex is what helps support the lung and prevent its collapse, according to researchers.

"This is fundamental to bird physiology," said Devon Quick, an zoologist at the university who completed the work as part of her doctoral studies. "It's really strange that no one realized this before. The position of the thigh bone and muscles in birds is critical to their lung function, which in turn is what gives them enough lung capacity for flight."

Every other animal that has walked on land, the scientists said, has a moveable thigh bone involved in their motion – including dinosaurs. The findings add to a growing body of evidence in the past two decades that challenge some of the most widely-held beliefs about animal evolution, according to the Oregon State group.

"For one thing, birds are found earlier in the fossil record than the dinosaurs they are supposed to have descended from," Ruben said. "That's a pretty serious problem, and there are other inconsistencies with the bird-from-dinosaur theories.

"But one of the primary reasons many scientists kept pointing to birds as having descended from dinosaurs was similarities in their lungs," Ruben said. "However, theropod dinosaurs had a moving femur and therefore could not have had a lung that worked like that in birds. Their abdominal air sac, if they had one, would have collapsed."

There are some similarities between birds and dinosaurs, and it is possible, they said, that birds and dinosaurs may have shared a common ancestor, such as the small, reptilian "thecodonts,"

which may then have evolved on separate evolutionary paths into birds, crocodiles and dinosaurs. The lung structure and physiology of crocodiles is much more like that of dinosaurs than to that of birds, Ruben remarked.

“It just seems pretty clear now that birds were evolving all along on their own and did not descend directly from the theropod dinosaurs, which lived many millions of years later,” Quick said.

Oregon State research on avian biology and physiology was among the first in the nation to begin calling into question the dinosaur-bird link since the 1990s. Other findings have been made since then also raising questions. But old theories die hard, Ruben said, especially when it comes to some of the most distinctive and romanticized animal species in world history.

“Frankly, there’s a lot of museum politics involved in this, a lot of careers committed to a particular point of view even if new scientific evidence raises questions,” Ruben said. In some museum displays, he said, the birds-descended-from-dinosaurs evolutionary theory has been portrayed as a largely accepted fact, with an asterisk pointing out in small type that “some scientists disagree.”

“Our work at OSU used to be pretty much the only asterisk they were talking about,” Ruben said. “But now there are more asterisks all the time. That’s part of the process of science.”

Image: Birds are believed to have descended from theropod dinosaurs not unlike the above species, Guanlong wucaii, discovered in 2006. (Image courtesy US Nat'l Science Foundation)