

# **Weird-winged dino sets science world aflutter (w/ Video)**

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Artist's impression of the new dinosaur Yi qi. Credit: Dinostar Co. Ltd

The discovery of a pigeon-sized dinosaur with bat-like wings has exposed bizarre twists in the early evolution of birds, said scientists in China Wednesday whose conclusions were immediately challenged.

Named Yi qi, for "Strange Wing" in Mandarin, the creature was an odd and unexpected addition to a long list of failed evolutionary experiments in flight—having sported wings of membrane rather than feathers, they said.

"It is definitely an example showing how much experimentation occurred," said palaeontologist Xu Xing of the Chinese Academy of Sciences in Beijing, who co-authored a study in the journal *Nature*.

"Close to the origin of birds (from dinosaurs)... many lineages tried in a different way to get into the air, but finally only one group succeeded."

Xu and his team described Yi qi as "bizarre" in the title of their study, an unusual adjective in the dry, scientific world of science publishing.

Yi qi was not a direct ancestor of birds, but a close relative from an extinct line.

Bearing the shortest name ever given to a dinosaur, Yi qi belonged to a family of tiny creatures called Scansoriopterygids, which had feathers and exceptionally long finger-like digits that may have been used for climbing trees or catching insects

Known only from fossils found in China, Scansoriopterygids were closely related to primitive bird types like Archaeopteryx, considered a

transitional species between non-avian dinosaurs and birds.

But they were not thought to have been fliers. Until now.

Yi qi, the newest addition to the group, weighed about 380 grammes (13.4 ounces) as an adult, and had tiny teeth set in a four centimetre-long (1.6-inch) skull.

It had feathers considered too flimsy to be useful in flight.

But what really sets Yi qi apart is a bony rod, about 13 centimetres (five inches) long, jutting from each wrist.

"To be honest it took a long time for us to figure out" what it was, Xu said in a podcast recorded by Nature.

Then eureka! While never before seen in [dinosaurs](#), the team realised the feature is similar to one sported by modern-day airborne mammals—think bats and flying squirrels.

"We realised that it is a structure very, very important finally for flight," said Xu.

Sure enough, the team also found remnants of "membranous tissue" preserved with the bones.

## **'From strange to bizarre'**

Yi qi is known from a sole fossil discovered by a farmer near Beijing in 160-million-year-old rock from the Jurassic period.

Nothing below the ribcage was preserved, so the critter's pelvis, hind legs and tail had to be surmised from what is known of other



Scansoriopterygids.

Not everyone is convinced by the role ascribed to the bony protrusions, each curved at either end.

"Things have just gone from the strange to the bizarre," University of California biologist Kevin Padian said of the findings in a comment carried by Nature.



Skull of the new dinosaur Yi qi. Credit: Zang Hailong/IVPP

"To fly actively, an animal must be able to execute a flight stroke that can generate a vortex wake that propels it forward," he said.

"No evidence presented so far suggest that Yi qi had this ability," added Padian, and suggested "we can shelve the possibility that this dinosaur flapped".

As for gliding, the jury is out, he said, given that little is known of the tiny animal's posterior, and thus its centre of gravity.

"We are left in a quandary: an animal with a strange structure that looks as if it could have been used in flight, borne by an animal that otherwise shows no such tendencies," Padian wrote.

For Nature editor Henry Gee, a palaeontologist and evolutionary biologist, a feathered dinosaur with a wing membrane "is not something anyone would ever have expected to find", adding the paper "will cause a great deal of flap, dare one say."

Xu insisted the evidence "supports the inference that it is a gliding or flying animal."

"To be honest, I just couldn't imagine if this structure were not used in flight what else it could function in," he said.

"But of course, it is open. I definitely welcome other scientists to do some analyses and have their opinion of this structure."

A Nature video on the discovery can be viewed here.

**More information:** A bizarre Jurassic maniraptoran theropod with preserved evidence of membranous wings,  
[nature.com/articles/doi:10.1038/nature14423](https://doi.org/10.1038/nature14423)

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