

# Tiny “T. rex” found

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Courtesy *Science*  
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When you think of *Tyrannosaurus rex*, a few striking physical traits come to mind: an oversized head with powerful jaws, tiny forearms, and muscular runner’s legs.

But researchers have just identified a much smaller dinosaur from China, no more than three meters (10 feet) long, with the same features – and it predates the *T. rex* by tens of millions of years.



The 125-million year old *Raptorex* in front of its bigger descendant, *T. rex*. (drawing by Todd Marshall)

This finding, published online by the journal *Science* on Sept. 17, means that such specialized traits characterized all sizes of “tyrannosauroids” during their reign in the Cretaceous Period, researchers say.

The tyrannosaur body plan thus evolved at “basically our bodyweight,” said University of Chicago researcher and National Geographic explorer-in-residence Paul Sereno. “That’s pretty staggering, because there’s no other example that I can think of where an animal has been so finely designed” at a size about one ninetieth, by weight, of that which its descendants would become.

Sereno and colleagues studied the new fossil, naming it *Raptorex kriegsteini*, and estimated that it was a young adult when it died. The scientists examined the skull, teeth, nose, spine, shoulders, forearms, pelvis, and hind legs. They compared the features to larger tyrannosauroids, the evolutionary group of *T. rex*-like dinosaurs.

“First, we used the best mechanical preparation of the specimen possible, which entails the finest needles and air abrasives under a microscope,” Sereno said. “Then we made molds and casts of the cranial bones, assembled a cast skull, and sent that skull through a CT scanner at the University of Chicago hospital to get the snout cross-section.”

A microscopic examination indicated the beast “had lived to be five or six,” he added.

The researchers conclude that the “predatory skeletal design” of *R. kriegsteini* was simply scaled up with little change in its carnivorous descendants. Sereno and his colleagues also use this new

fossil to propose and describe three major stages in the evolution of body form in tyrannosauroids.

*Raptorex* is estimated to have lived at least 125 million years ago. The much bigger descendants, starting from about 90 million years ago, dominated Asian and North American landscapes until the great dinosaur extinction 65 million years ago.

Henry Kriegstein, a private fossil collector, brought the nearly complete *Raptorex* skeleton to Sereno's attention after buying it from a vendor. After Sereno and colleagues finish a more detailed study of *Raptorex*, researchers plan to return it to a museum in Inner Mongolia, where they say it was illicitly excavated.