'Tiny' new T-Rex ancestor found in China (w/ Video)

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Weighing as little as 1/100th that of its descendant T. rex, 125-million year old Raptorex shows off the distinctive body plan of this most dominant line of predatory dinosaurs. This is based on a fossil skeleton discovered in Inner Mongolia, China. Credit: Drawing by Todd Marshall

(PhysOrg.com) -- A 9-foot dinosaur from northeastern China had evolved all the hallmark anatomical features of Tyrannosaurus rex at least 125 million years ago. University of Chicago paleontologist Paul Sereno and five co-authors describe the newly discovered dinosaur in the Sept. 17 *Science Express*, advanced online edition of the journal *Science*.

Raptorex shows that tyrannosaur design evolved at "punk size," said Sereno, a National Geographic Explorer-in-Residence, "basically our bodyweight. And that's pretty staggering, because there's no other example that I can think of where an animal has been so finely designed at about 100th the size that it would eventually become."

Raptorex displays all the hallmarks of its famous descendant, Tyrannosaurus rex, including a large head compared to its torso, tiny arms and lanky feet well-suited for running. The Raptorex brain cast also displayed enlarged olfactory bulbs—as in T. rex—indicating a highly developed sense of smell.

"It's really stolen from tyrannosaurids all the fire of the group," Sereno said. All that Raptorex left for its descendants is "a suite of detailed features largely related to getting bigger."

At only 9 feet in length, Raptorex already had the powerful jaws, puny arms, and quick legs of its much larger and more famous descendants. Credit: Drawing by Todd Marshall

Sereno marvels at the scalability of the tyrannosaur body type, which when sized up 90 million years ago completely dominated the predatory eco-niche in both Asia and North America until the great extinction 65 million years ago at the end of the Cretaceous Period.

"On other continents like Africa, you have as many as three large predators living in the same areas that split among them the job of eating meat," he said. But in Africa, the allosaurs never went extinct, as they did in North America, possibly presenting an evolutionary opportunity for Raptorex. "We have no evidence that it was a competitive takeover," said Sereno, "because we have never found large tyrannosaurs and allosaurs together."

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 amore detailed study of Raptorex, it will be returned to a museum in Inner Mongolia, the place where the fossil was illicitly excavated.

More information: Paul C. Sereno, Lin Tan, Stephen L. Brusatte, Henry J. Kriegstein, Xijin Zhao and Karen Cloward, "Tyrannosaurid Skeletal Design First Evolved at Small Body Size," early online edition of *Science*, Sept. 17, 2009.

Source: University of Chicago (news : web)