

Was mighty T.rex 'Sue' felled by a lowly parasite?

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An artist's rendering of a T. rex suffering from a trichomonosis-like disease, a parasitic infection caused by a protozoan, a single-celled organism that infects the mouth and throat and may have caused the animal to starve to death, according to a study conducted by an international team of researchers led by Ewan Wolff of UW-Madison's School of Veterinary Medicine. The renderings show the infection and how it relates to the lesions found on the mandible of 'Peck's Rex' (Museum of the Rockies). Renderings by Chris Glen, University of Queensland

(PhysOrg.com) -- When pondering the demise of a famous dinosaur such as 'Sue,' the mighty *Tyrannosaurus rex* whose fossilized remains are

a star attraction of the Field Museum in Chicago, it is hard to avoid the image of clashing Cretaceous titans engaged in bloody, mortal combat.

It is an image commonly promoted by museums and dinosaur aficionados. Sue's remains, in fact, exhibit holes in her jaw that some believed were battle scars, the result of conflict with another dinosaur, possibly another *T. rex*.

But a new study, published today (Sept. 29, 2009) in the online journal *Public Library of Science One*, provides evidence that Sue, perhaps the most famous dinosaur in the world, was felled in more mundane fashion by a lowly parasite that still afflicts modern birds. The study, conducted by an international team of researchers led by Ewan D.S. Wolff of the University of Wisconsin-Madison and Steven W. Salisbury of the University of Queensland, Australia, pins the demise of Sue and other tyrannosaurs with similar scars on an avian parasitic infection called trichomonosis, caused by a single-celled parasite that causes similar pathologies on the mandibles of modern birds, raptors in particular.

It is possible the infection in her throat and mouth may have been so acute that the 42-foot-long, 7-ton dinosaur starved to death, says Wolff, a vertebrate paleontologist and a third-year student at the UW-Madison School of Veterinary Medicine. Co-authors of the study include famed paleontologist John R. Horner of the Museum of the Rockies, which funded the study, and David J. Varricchio of Montana State University.

The focus of the new study was a survey of lesions on the jaws of Sue and nine other tyrannosaur specimens. The lesions had previously been attributed to bite wounds or, possibly, a bacterial infection.

"What drew my attention to trichomonosis as a potential candidate for these mysterious lesions on the jaws of tyrannosaurs is the manifestation of the effects of the disease in [bird] raptors," explains Wolff. "When

we started looking at trichomonosis in greater depth, there was a story that matched some lines of evidence for transmission of the disease in tyrannosaurs."

In birds, trichomonosis is caused by a protozoan parasite called *Trichomonas gallinae*. It can be transmitted from birds such as pigeons, which commonly carry the parasite but often suffer few ill effects, to raptors such as falcons and hawks, where it causes serious lesions in the mandibles. The pattern of lesions, says Wolff, closely matches the holes in the jaws of tyrannosaurs and occurs in the same anatomical location.

The scars of combat among tyrannosaurs and other dinosaurs, Wolff notes, are not uncommon, but differ notably from the lesions that are the focus of the current study. The holes caused by trichomonosis tend to be neat and have relatively smooth edges, while bite marks are often messy, and they scar and puncture bone in ways that are not readily comparable.

Tyrannosaurs, notes Wolff, are known to have been gregarious, intermingling, fighting amongst themselves, and sometimes eating one another. Transmission of the parasite may have been through salivary contact or cannibalism, he says, noting that there is no known evidence of trichomonosis in other dinosaurs.

"This leads us to suspect that tyrannosaurs might have been the source of the disease and its transmission in its environment," Wolff says.

For the disease to manifest itself in the jaws of Sue and other tyrannosaurs, it would have had to be at an advanced stage as the parasite typically sets up housekeeping as a film in the back of the throat.

"The lesions we observe on Sue suggest a very advanced stage of the disease and may even have been the cause of her demise," says Wolff.

"It is a distinct possibility as it would have made feeding incredibly

difficult. You have to have a viable pharynx. Without that, you won't make it for very long, no matter how powerful you are."

Source: University of Wisconsin-Madison ([news](#) : [web](#))

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