Academic uncovers Holy Grail of palaeontology

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Palaeontologist Dr Phil Manning, working with National Geographic Channel has uncovered the Holy Grail of palaeontology in the United States: a partially intact dino mummy.

Named Dakota, this 67-million-year-old dinosaur is one of the most important dinosaur discoveries in recent times - calling into question our conception of dinosaurs' body shape, skin preservation and movement.

The find is documented in the UK premiere of Dino Autopsy on Sunday 9 December at 9pm on National Geographic Channel. The special follows leading palaeontologists in the UK and United States as they uncover the rocky tomb of one of the most complete dino mummies ever found and carry out a CT scan on the specimen.

Most of our understanding of dinosaurs is based on fossilised skeletal remains - from bones and teeth, usually the only tissue durable enough to fossilise. Dakota includes an uncollapsed skin envelope on many parts of the body and limbs that offers a degree of insight impossible from just bone structure. Fossilised skin and tendons have allowed us to reconstruct major muscle sizes - with many body parts offering a tantalising glimpse of a 3-D dinosaur.

"It is quite fair to say that our dinosaur mummy [Dakota] makes many other dinosaurs look like road kill. Simply because the evidence we're getting from our creature is so complete compared to the disjointed sort of skeletons that we usually have to draw conclusions from", said Dr

Manning, a palaeontologist from The School of Earth, Atmospheric and Environmental Studies (SEAES) at The University of Manchester.

Post excavation, Dakota was transported to the Black Hills Institute in the United States, where it was revealed to be a Hadrosaur, more commonly called a duck-billed dinosaur. A team of UK-based scientists then tested skin samples, examining the fossilised skin to determine how Dakota might have looked, and measuring muscle mass to determine how it might have moved.

With the aid of a giant CT scanner provided by the Boeing Company, technology usually reserved for testing aircraft and spacecraft parts for NASA, the team also attempted to peer inside Dakota's preserved body and tail. The scan of the 3,600-kilogram body was of the one of the largest CT scans ever undertaken.

Dino Autopsy reveals what the scans showed and examines the extent to which the results could change our understanding of Hadrosaurs forever. Dakota may contribute some significant findings to the field of palaeontology, altering our comprehension of how dinosaurs looked and moved:

* The Hadrosaur's backside appears to be approximately 25 percent larger than previously thought; a surprising conclusion that could change our image of the dinosaur for the last 150 years.

* With a larger backside, the Hadrosaur would have been able to reach top speeds of 45 kilometres an hour - 16 kilometres faster than the T. Rex.

* The skin envelope also shows evidence that the Hadrosaur may have been striped and not block coloured, producing an almost striped camouflage pattern on some parts of the dinosaur.

* With its body so well preserved, researchers are able to more accurately estimate the spacing between vertebrae. While most museums have dinosaur bones stacked tightly against each other, Dr. Manning's research suggests that the vertebrae should be stacked approximately one centimetre apart. This could mean that some dinosaurs are at least one metre longer than previously thought.

Dakota was discovered in 1999 by Tyler Lyson (then aged just sixteen), on his family's land in North Dakota. Subsequently, he teamed up with British palaeontologist Dr. Phil Manning and scientists from the University of Manchester, who have worked with Tyler and his team of volunteers as they struggle to unearth the tomb, bringing us closer to understanding how this dinosaur really looked and moved, and whose fossil remains survived through the sands of time.

The National Geographic Society partly funded analysis of the mummified dinosaur, including the CT scanning of the fossil. Scientific papers based on study of the dinosaur are in progress.

Source: University of Manchester