

## If Only They Had CT Scans... 69 MIn Years Ago



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Just like a scene out of the blockbuster *Jurassic Park* films, researchers have used advanced imaging equipment to identify a facial tumour in a fossil of a primitive dwarf duck-billed dinosaur discovered in Romania's Transylvania region.

The international team of researchers employed the Micro-CT scanning facilities at SCANCO Medical AG in Switzerland to record the first-ever case of a tumorous facial found in the jaw of the dwarf *Telmatosaurus transsylvanicus*.

This non-cancerous facial tumour is often found in humans, mammals and some modern reptiles, but has never been encountered in fossil animals before.

"The presence of such a deformity early in their evolution provides us with further evidence that the duck-billed dinosaurs were more prone to tumours than other dinosaurs," explained Kate Acheson, a PhD student at the University of Southampton.

The 'hadrosaur' fossil is believed to be about 67-69 million years old and was discovered in the 'Valley of the Dinosaurs' in the Hațeg County Dinosaurs Geopark in western Romania which is a designated UNESCO World Heritage Site.

With the fossil clearly deformed when it was first found more than a decade ago, the evident outgrowth remained unclear until now, said Dr Zoltán Csiki-Sava of the University of Bucharest, Romania, who led the field trip which uncovered the fossil.

He said that the Micro-CT scanning was used to 'peek' un-intrusively inside the peculiar *Telmatosaurus* jawbone.

The scans suggested that the dinosaur suffered from a condition known as an 'ameloblastoma', a tumorous, benign, non-cancerous growth known to afflict the jaws of humans and other mammals, and some modern reptiles.

"The discovery of an ameloblastoma in a duck-billed dinosaur documents that we have more in common with dinosaurs than previously realised. We get the same neoplasias," said Dr Bruce Rothschild from the Northeast Ohio Medical University and an expert in palaeopathology who studied the Micro-CT scans.

To appease the concerns of avid dinosaur lovers, the researchers believe it was unlikely that the tumour caused the dinosaur any serious pain during its early stages of development, just as in humans with the same condition.

However, they estimated from its size that this particular dinosaur died before it reached adulthood. Since its preserved remains consist of only the two lower jaws, no one can ascertain whether the presence of the ameloblastoma could have contributed to its death.

The researchers said modern examples show that predators often attack a member of the herd that looks a little different or is even slightly disabled by a disease.

"The tumour in this dinosaur had not developed to its full extent at the moment it died, but it could have indirectly contributed to its early demise," said Dr Csiki-Sava.

The study team included researchers from Babeş-Bolyai University, and the University of Bucharest (Romania), Northeast Ohio Medical University, and Johns Hopkins University (USA), and the University of Southampton (UK) and the results published in the journal Scientific Reports.

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