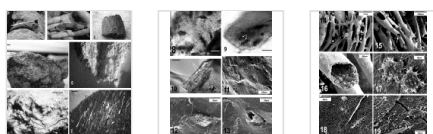


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Soft sheets of fibrillar bone from a fossil of the supraorbital horn of the dinosaur *Triceratops horridus*

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Abstract

Soft fibrillar bone tissues were obtained from a supraorbital horn of *Triceratops horridus* collected at the Hell Creek Formation in Montana, USA. Soft material was present in pre and post-decalcified bone. Horn material yielded numerous small sheets of lamellar bone matrix. This matrix possessed visible microstructures consistent with lamellar bone osteocytes. Some sheets of soft tissue had multiple layers of intact tissues with osteocyte-like structures featuring filipodial-like interconnections and secondary branching. Both oblate and stellate types of osteocyte-like cells were present in sheets of soft tissues and exhibited organelle-like microstructures. SEM analysis yielded osteocyte-like cells featuring filipodial extensions of 18–20 μm in length. Filipodial extensions were delicate and showed no evidence of any permineralization or crystallization artifact and therefore were interpreted to be soft. This is the first report of sheets of soft tissues from *Triceratops* horn bearing layers of osteocytes, and extends the range and type of dinosaur specimens known to contain non-fossilized material in bone matrix.

Keywords

Osteocytes; Fossil; Dinosaur; *Triceratops*; Horn; Ancient soft tissue