

**THE EARLY EVOLUTION OF POSTCRANIAL PNEUMATICITY IN
SAROPODOMORPH DINOSAURS: NEW EVIDENCE FROM SOUTH AFRICA**

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Postcranial skeletal pneumaticity (PSP) is present in four sauropodomorph taxa from the Elliot Formation (Late Triassic – Early Jurassic) of South Africa. These taxa, *Eucnemesaurus fortis*, an unnamed basal anchisaur (near-sauropod), *Antetonitrus ingenipes* and an unnamed basal sauropod, occupy a range of phylogenetic positions spanning the basal sauropodomorph – sauropod transition. The PSP consists of subfossae that excavate the vertices of the posterior infradiapophyseal fossae of the posterior dorsal vertebrae. These subfossae range from simple shallow depressions (*Eucnemesaurus*) to deep, steep-sided, internally subdivided and asymmetrically developed chambers (*Antetonitrus*). The middle and anterior dorsal vertebrae of these taxa lack PSP demonstrating that abdominal air sacs were the source of the invasive diverticula. Thus it appears that the evolution of PSP in sauropodomorphs proceeded in a fundamentally different pattern from that displayed by theropods where PSP started from the cervical air sacs. The site of initial PSP invasion in these sauropodomorphs suggests that the infradiapophyseal fossae were receptacles that housed pneumatic diverticula to begin with. It is probable that the identical infradiapophyseal fossae of other saurischians and basal dinosauriforms also housed pneumatic diverticula and that rigid non-compliant lungs ventilated by compliant posterior airsacs evolved prior to the origination of Dinosauria.