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INSIGHTS ON THE ENCEPHALIC CAVITY OF SPARASSODONTA (MAMMALIA, METATHERIA) FROM 3D DIGITAL RECONSTRUCTIONS

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We study the encephalic cavity of the extinct native mammal predators from South America (Sparassodonta, Metatheria) through computed tomography and tridimensional reconstructions. A total of 20 specimens (nine species) are studied, including small (2–5 kg) to large (100–120 kg) morphotypes, represented by: the hathliacynids *Cladosictis patagonica*, *Sipalocyon externus*, and *S. gracilis*; the proborhyaenid *Callistoe vincei*; the borhyaenoid *Prothylacynus patagonicus*; the boryhaenids *Borhyaena tuberata*, *Arctodictis sinclairi*, and *A. munizi*; and the thylacosmilid *Thylacosmilus atrox*. Surface of the encephalic cavity of sparassodonts is somewhat gyrencephalic, with the exception of the hathliacynids that exhibit lissencephalic endocasts. General anatomy of the endocasts resembles the one of the basal South American metatherians (e.g., *Pucadelphys andinus*) with the following clear differences: low volume of the olfactory bulbs (OB; < 10%), small cast of paraflocculi (< 0.3%; absent in borhyaenoids, with the exception of *T. atrox*), large casts of transverse sinus, exposure of midbrain in hathliacynids, marked primary fissure delimiting anterior and posterior lobe of vermis, large casts of condylohypoglossal foramina, marked rhinal fissure on cerebral hemispheres. Encephalization quotients (EQ: 0.40–0.15) are slightly higher than the EQ of extinct basal metatherian (e.g., *P. andinus*) but lower than the EQ of extant marsupials and follow the already studied trend that larger mammalian crania have lower EQ (e.g., *A. munizi*). Altogether the encephalic cavity of sparassodonts combines both derived and basal features. Because sparassodonts are stem marsupials, these preliminary results give insights on the diverse paths of brain evolution among metatherians.

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