

Morphological variability of petrous bone in extant and extinct suids (Mammalia, Artiodactyla): taxinomic and phylogenetic implications of a new morphometric protocol

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Suids are a suitable taxinomic group for understanding evolutionary mechanisms owing to their rich fossil record and their high morphological and ecological variability. Establishing a correct taxonomy is a crucial prerequisite for any paleontological study. The petrous bone displays a complex morphology and is an important source of taxinomic/phylogenetic characters, but their use is hindered by a poor understanding of intraspecific variability. We therefore developed an original protocol to quantify morphological variation of lateral and medial faces of the petrous bone by combining 3D traditional morphometrics (linear distances and areas) on surface models from CT scans and 2D geometric morphometrics (landmarks, semilandmarks) on photographs, drawings, and standardized views from 3D models. We applied this protocol to 74 petrous bones encompassing 12 taxa to disentangle intraspecific and interspecific components of variability of main morphological structures (bone outline, position and shape of main foramina). Using two reference groups of more than twenty specimens, the extant wild boar (*Sus scrofa*) and an extinct suid from Ahl al Oughlam, Morocco (previously attributed to *Kolpochoerus*), we identified characters varying intraspecifically (e.g., length of medial process of *protympanum*). We also compared the degree of intraspecific variation of these external characters to that of the internal structures (cochlea and semicircular canals) quantified in a previous study. We tested the influence of variable characters on taxinomic delineation and phylogenetic placement of species by conducting a phylogenetic analysis that combines discrete characters with quantitative characters from shape analyses of the petrous bone. One of the main results is the close phylogenetic affinity of the Ahl al Oughlam suid with extant warthogs (*Phacochoerus*) and the paraphyletic group of *Metridiochoerus*, confirming some previous studies carried out on skulls and teeth.

Mots-Clés : Suidae, taxinomy, biogeography, biochronology, *Kolpochoerus*, *Metridiochoerus*, *Phacochoerus*

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Intervenant