

of the dermis. Rhinoceros dermis is quite thick in general, ranging from 1.5-3 cm thick across the skin of the face. The dermis retains much of this thickness beneath the horn, ranging from 1-2 cm thick beneath the rostral nasal horn, and from 2-3 cm thick beneath the caudal frontal horn. The horn-dermis complex is affixed to the bone itself by dense populations of extrinsic fibers derived from the reticular dermis. These fibers penetrate the bone at an oblique angle, and their irregular mineralization gives the cleaned bone surface its characteristic rugose appearance. A more thorough understanding of how this structure affects the morphology of the underlying bone aids in differentiation between horn-induced rugosities and rugosities with other causal associations, such as tendon attachment or secondary dermal ossification. This finer discrimination allows hypotheses regarding unpreserved skin structures to be framed more accurately.

RHINOCEROS HORN ATTACHMENT: ANATOMY AND HISTOLOGY

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Rugosities on dermal bones of the skull have often been used to support inferences regarding unpreserved skin structures in extinct animals. Such associations often seem obvious when examined in extant osteological specimens, where the shape and conformation of epidermal appendages remain intact, but inferences regarding the type and morphology of unpreserved skin structures are not always so clear. Rhinoceros horn provides an example of an epidermal structure whose morphology cannot be readily determined from the shape of its associated rugosity. The horn attachments of two adult white rhinoceros (*Ceratotherium simum*) were examined by CT scanning, dissection, and histological sectioning. The horn proper is an epithelial structure composed of hair-like filaments embedded in a keratinized and mineralized matrix, which in turn is strongly affixed to the dense irregular connective tissue