

## **HISTOLOGICAL OBSERVATIONS ON BONES OF MESOSAURS (PROGANOSAURIA) FROM IRATI FORMATION, PARANÁ BASIN, BRAZIL.**

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The pachyostosis in Mesosaurus was first observed by Gervais (1864) as due to strong thickening of the ribs. Its histological analysis was made by Ricqlès (1968,1974). Recent histological studies on bones of Mesosaurus, Stereosternum and Brazilosaurus have been made by Timm (1997, 1999) in which it is revealed two different types of pachyostosis: ribs and vertebrae of Mesosaurus and Stereosternum are characterized by hyperostosis of periosteal cortex, increased bone density (due to greater compactness and mineralization of bone tissue), absence of free medullary cavity (in ribs) and remains of calcified cartilage matrix, what defines pachyosteosclerosis; ribs of Brazilosaurus differ from other mesosaurs by the absence of hyperostosis in periosteal cortex, what limits the bone volume, but the compactness of medullary cavity and absence of free medullary cavity defines its pachyostosis sensu lato. Bones like ulna, femur and humerus do not manifest pachyostotic features. The histological analysis reveals the presence of a medullary cavity formed by cancellous and secondary deposits of compact bone. In the ulna, the periosteal cortex is not hyperostotic and is poorly vascularized. Femur and humerus, otherwise, are extensively vascularized. In the femur, the periosteal cortex is apparently formed by pseudo-plexiform bone (like many dinosaurs and mammals) because of presence of many longitudinal and transversal vascular canals. This feature may be related to bone nutrition while swimming.