# Bone histology of the ornithopod dinosaur *Rhabdodon* from the Late Cretaceous of the Iberian Peninsula — Preliminary data

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*Rhabdodon* is an ornithopod dinosaur common in Late Cretaceous continental deposits from central and western and central Europe (Norman, 2004). Even though *Rhabdodon* histological sections had been documented since the beginning of the 20th century (Nopcsa, 1933: rib sections) to recent decades (Reid, 1985, 1990: limb bones, ribs), not any detailed description of its histological characterization has been made to date.

The Late Cretaceous Chera locality (Valencia province, Spain) has yielded a large amount of *Rhabdodon* remains, which has permitted the realisation of a considerable number of polished and transverse thin-sections, mainly from long bones (ribs, humeri, tibiae, femora) and axial elements (caudal vertebrae) of both juvenile and adult individuals.

*Rhabdodon* long bone structure consists of a thick cortex composed mainly of primary compact bone enclosing a well developed medullary cavity, devoid of bony trabeculae. The cortical region is formed by deposition of primary bone tissue of fibro-lamellar type (Francillon-Vieillot, 1990). Haversian (i. e., secondary) reconstruction is evidenced by the occasional presence of scattered secondary osteons, visible throughout the cortex. Middle to outer regions of the cortex exhibit a stratification into layers, due to the presence of lines of arrested growth (LAGs) which mark pauses of bone deposition. In general, the vascularity of the cortex grades from an innermost highly vascularized region with predominately reticular to locally subplexiform vascularization to an external region with longitudinal to laminar vascularized bone tissue. Finally, the outermost periosteal cortex consists of nearly avascular bone.

Thus, histological examinations of diaphyseal transverse sections reveal most of *Rhabdodon* individual's life history, suggesting a initial phase of fast and continuous growth early in ontogeny (deposition of high vascularized fibro-lamellar bone tissue), followed by a gradual decline in the rate of growth (evidenced by a more organized longitudinal vascularity and presence of interruptions in bone deposition), and a final growth cessation (deposition of external layers of an almost avascular tissue). Interpretation of rest lines (LAGs) as annual events permits an estimation of the age at which the animal reaches adult size from the number of rings present in adult samples (Chinsamy, 2005, and references therein). Thus, it has been estimated a minimum age of about eight to ten years for *Rhabdodon* to reach its final body size.

## References

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