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Biomineralization, structure and diagenesis of the coelenterate skeleton

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Review of biomineralization and microstructure in major coelenterate groups leads to generalizations regarding the locus and method of skeletogenesis. The Hydrozoa, which include the most primitive skeleton-bearing coelenterates, generally have an aragonitic skeleton formed externally of varying combinations of spherulitic crystallites modified by organic matrix material. Living Anthozoa show two markedly differing plans of skeletogenesis. In Octocorallia, internal crystallization of calcite closely controlled by organic matrix forms spicules, while the Scleractinia have external crystallization of aragonite with microstructure likewise closely controlled by envelopes of organic matrix. Fossil corals (Rugosa) followed the same architectural plan as the Scleractinia, although building of calcite. As a result of differing biogenic mineralogy, diagenetic structures differ greatly between the two especially where vadose or fresh water diagenesis was involved. Both groups are characterized by biogenic structures of a trabecular or fibro-normal nature.

Key words: Biomineralization, skeleton structure, skeleton diagenesis, Scleractinia, Rugosa, Hydrozoa, Octocorallia.