FURCATE SEPTAL INCREASE OF A TRIASSIC CORAL

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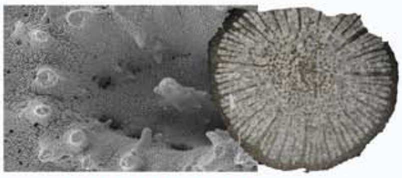
Textbook models of septal increase in Recent and fossil Scleractinia typically show **simple and straight septa** that appear in skeletal ontogeny as consecutive **cycles**.

The actual spectrum of septal morphological variability is, of course, much wider. Septa can be nearly completely straight smooth and solid, or undulated porous and covered with elaborate granulations.

In some corals, **higher-cycle septa** merge with septa of lower cycles to form characteristic **deltas** (e.g., *Deltocyathus*).



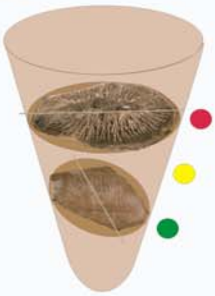
In some corals, **septa can be reduced to spines** as in stylophyllids or pocilloporids. Septa may reach the corallum center or be restricted to the peripheral zone; their edges can be free or merged with other septa or columella to form an axial structure.

In **micrabaciids** that have completely everted calices, septa grow centrifugally and increase of higher septal-cycles has been interpreted as **successive bifurcations of lower-cycle septa** in the peripheral zone of corallum.

Herein, we redescribe a **Triassic (Middle Carnian)** coral with very unorthodox septal increase based on new material from **Italian Dolomites**.

The coral, originally described as ***Montlivaltia septafindens* by Volz (1896)**, shows in the higher part of the corallum, septa that branch repeatedly and centripetally. This results in formation of septal sets composed of **3-10 blades ("septal brooms")**. Such multiple branching affects at least 52 septa that originate as single blades at the calicular perimeter.

Three to six much shorter non-branching septa regularly intercalate with the "septal brooms". Each **"septal broom" has a unique branching pattern however, remarkably, distances between adjacent branches and septa are equal**. Only some septa branch earlier in ontogeny (as observed in more proximal, preserved part of the corallum) suggesting that septal branching is late ontogeny phenomenon.



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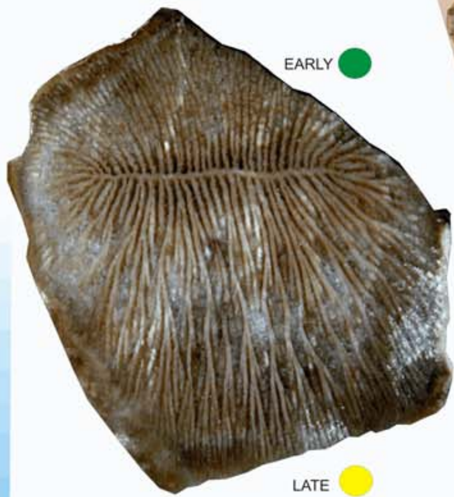

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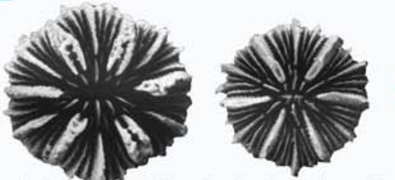
There are no Triassic corals showing similar septal increase to "*M.*" *septafidens*.
However, certain analogy reveal some post-Triassic fossil and Recent corals.

Cretaceous aulastreoporids (e.g., *Preverastrea*), *Trochoidomeandra*, and e.g., *Tiarasmilia* develop long protrusions on septal faces.

In *Tiarasmilia*, and few other taxa these protrusions occur on faces of thick and well developed septa hence can be considered "ornamentation" instead of being equipotential septal branches as in the Triassic form.

In the aulastreoporids and *Trochoidomeandra*, however, such structures transform into septa of new corallites that can develop in the original interseptal spaces.



Equipontential septal branches have been observed in few specimens of **Recent caryophylliid *Trochocyathus ?rhombocolumna* Alcock, 1902**, however, only the primarily septa, which split only once dichotomously. Specimens with septal branching behaviour are extremely rare in population of *T. ?rhombocolumna* that may suggest teratological stimulus (however, typical traces of coral intruders have not been detected).

On the other hand, in some "healthy" morphotypes of ***Madrepora oculata* Linnaeus, 1758** septa in distal parts of corallite can be significantly reduced and develop several, chaotically distributed small rods.

The above examples clearly show that coral septa may differ significantly from the "orthodox" textbook models, however, none of these is fully comparable with the septal extravaganza of the Triassic "*M.*" *septafidens*.

Observations that there are many "extravagant" Triassic corals (e.g., *Stylophyllum paradoxum* Frech, 1890, *Gigantostylis epigonus* Frech, 1890, etc), just at the beginning of the mass appearance of Scleractinia in the fossil record, raise questions: do they evidence very **wide range of the Triassic radiation**, or rather **diverse skeletogenic and growth strategies inherited by Triassic corals from the Palaeozoic scleractiniomorphs**?

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