Macrofossils from the Late Jurassic (Oxfordian) Rosso Ammonitico cherty limestones and shales exposed in the Central Southern Alps (North Italy) are represented almost exclusively by rhynchozoids, aptychi, belemnites, crinoids, and solitary corals. Several specimens of the latter were illustrated by Laub (1994: Palaeontographica 234, 89-168) and assigned to micractinid species Stephanophyllus suevicus Quenstedt. A new, large collection of these corals from various localities in the Central Southern Alps provided new insights into their unusual preservation, and possible phylogenetic relationships.

The investigated corals have calcitic, diagenetically altered skeletons, though skeletal parts of all other organisms that originally had aragonitic mineralogy are not preserved (e.g., the only cephalopod fossil remains are originally calcitic rhynchozoids, aptychi and belemnite rostra whereas their original aragonitic phragmocones are not preserved, or occur as molds only). Coral heads may be attached to belemnites (see above) and aptychi, occasionally imprints of non-preserved shells on coral bases hint at aragonitic mineralogy of some substrates. We speculate that differences in diagenetic pathways of coral vs. mollusc skeletons, and resulting selective loss of mollusc and preservation of diagnostically altered coral skeletons were caused by compositional differences of their skeletal organic matrices.

It is a known fact that scleractinian and mollusc soluble organic matrices are different (i.e., those of scleractinians are highly glycosylated whereas the molluscan matrices are not as shown by stains in 1D-electrophoresis - Dauphin 2001: Inter. Journ. Biol. Macromolec. 28: 293-304). However, detailed geochemical scenario showing how these biochemical differences may influence different taphonomical pathways of corals and molluscs still need to be elucidated.

Similar examples of selective dissolution of originally aragonitic mollusc shells and preservation of calcified coral skeletons have been reported from the Upper Cretaceous deposits of Poland (Gautret, Cufi & Stolarski 2000: Acta Palaeontolog. Pol. 45, 107-118). Remarkably, both cases, coral skeletons were often silicified thus geochemical involvement of silica in this unusual taphonomic process can be postulated.

The bulk of the investigated solitary corals have an epithelial wall, solid septa with smooth distal margin and, in their axial region, numerous pilaform lobes. These forms conform thus to the thecocyst and not micractinid diagnosis. Thecocystidae Vaughan & Wells, 1943 are considered ancestral in evolution of post-Triassic corallomorphs, one of five traditionally recognized scleractinian suborders, though evolutionary relationships among these groups have not been satisfactory elucidated.

Much more puzzling is, however, the problem of the thecocystid origin. First thecocystids (e.g., type species Thecocystus tintinbulum Goldfuss, 1628) appear in Lower Jurassic (Toarcian) deposits in Europe but among Triassic "minirhabdellae" corals with clearly corallomorph features it is difficult to determine possible ancestral thecocystids. On the other hand, skeletal features of Jurassic thecocystids, e.g., numerous pilaform lobes, septal faces covered by dense, homogenous granulation, and "rounded" distal margins of septa, not the narrow distal septal edges typical of corallomorphs, suggest phylogenetic relationships with stylomorphs. Early Jurassic stylomorphs, contemporaneous with earliest thecocystids, are morphologically and microstructurally highly diversified including taxa similar to Thecocystus with small, flat coralla having spiny or lobate septa (see Stolarski & Russo, next poster).