ÚSTAV GEOLOGIE A PALEONTOLOGIE
PŘÍRODOVĚDECKÉ FAKULTY UNIVERZITY KARLOVY

si vás dovoluje pozvat na Paleontologický seminář (MG422S42A), který se koná

ve středu 14. listopadu 2018 od 14:50 ve Velké paleontologické posluchárně

Classification of early fossil sponges

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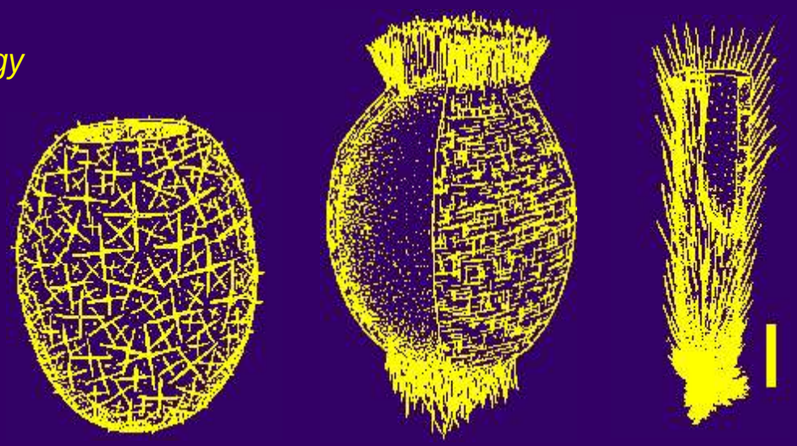


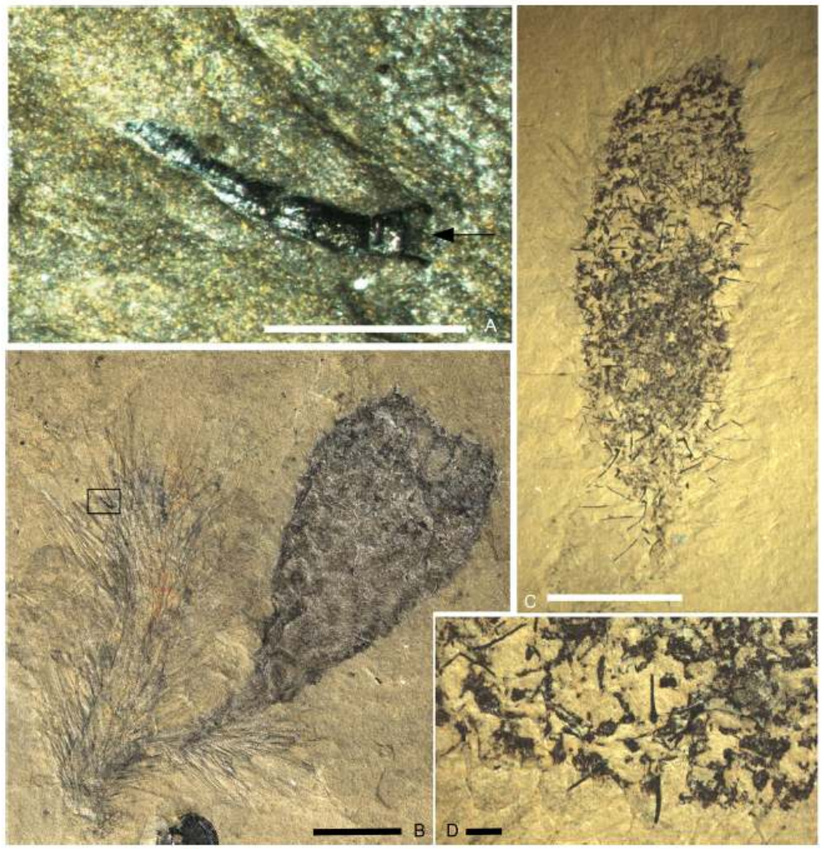
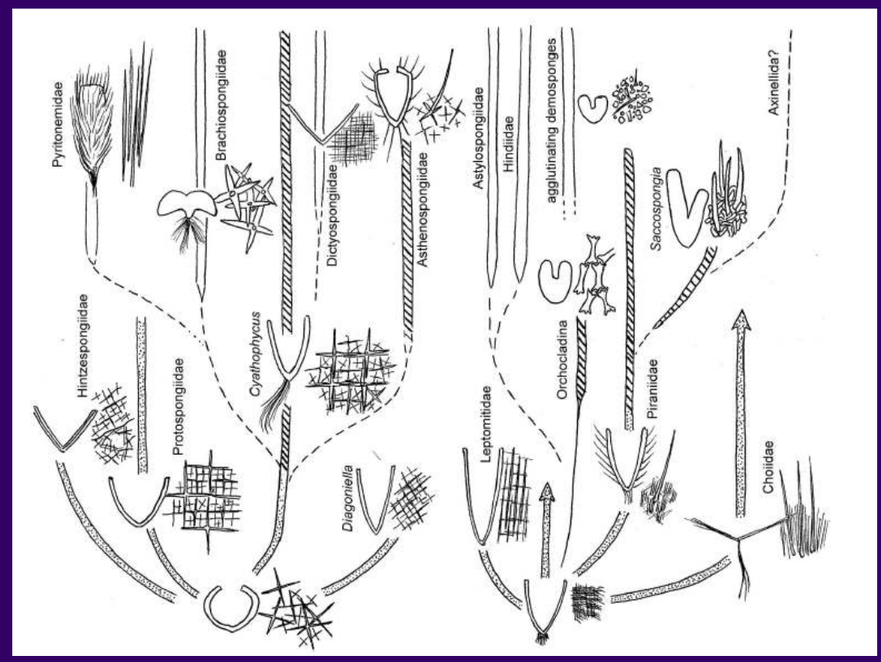


Fig. 5. Piraniids and chancelloriids. (A, B) ROM 56249, *Pirania muricata*, overall view of specimen (B) with attached chancelloriid, and with box showing position of detail (A) with three-dimensional preservation of spicule base, showing open base (arrowed) and sclerite-like morphology. (C, D) ROM 64299, undetermined chancelloriid, showing overall form (C) and details of three-dimensionally pyritised sclerites (D). Scale bar: 1 mm for (A, D); 10 mm for (B, C).



SCIENTIFIC REPORTS

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Discovery of missing link between demosponges and hexactinellids confirms palaeontological model of sponge evolution

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The two major extant groups of siliceous sponges, Demospongiae and Hexactinellida, are generally regarded as sister groups forming the clade Silicea, although the nature of their last common ancestor is uncertain. The fossil record contains a diverse range of basal demosponges that appear to have evolved from hexactine-bearing reticulosean ancestors, although a compelling morphological intermediate has not previously been discovered. Here we describe a new species of fossil sponge, *Conciliospongia oxiensis* gen. et sp. nov., from the Late Ordovician (~444 Ma) Keji Biota of South China. This species has a reticulate, tufted skeleton of oxiasterate monaxon spicules, characteristic of the fossil demosponge family Hazeliidae and modern heteroscleromorphs, with hexactine spicules and a globose body form inherited from reticulosean ancestors. This transitional morphology had previously been hypothesized in palaeontological studies. This morphological intermediate between two extant classes further confirms siliceous sponge monophyly and demosponge–hexactinellid spicule homology, and supports the primitive, stem-silicean interpretation of simpler-structured fossil reticulosans.

Reconstructing early sponge relationships by using the Burgess Shale fossil *Eiffelia globosa*, Walcott

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The relationships of the sponge classes are controversial, particularly between the calcareous and siliceous sponges. Specimens of the putative calcarean *Eiffelia globosa* Walcott from the Burgess Shale show the presence of diagnostic hexactinellid spicules integrated into the skeletal mesh. The arrangement of these spicules in *Eiffelia* is shown to be precisely equivalent to that of early protospongillid hexactinellids, and sponge growth occurred through an identical pattern to produce identical skeletal body morphology. The difference in spicule composition of the classes is interpreted through the observation of taphonomic features of *Eiffelia* that suggest the presence of at least two mineralogically distinct layers within the spicules. These results support molecular analyses that identify the calcarean–siliceosponge transition as the earliest major sponge branch and suggest that the heteractinids were paraphyletic with respect to the Hexactinellida.