ably among the least conspicuous representatives of this group, they are highly abundant and diverse in modern coral reefs. Here, we report a brittle-star assemblage from the middle Miocene of Austria. The assemblage consists of numerous dislocated skeletal plates, including the highly diagnostic spine-bearing lateral arm plates, retrieved from sediment infillings within a coral patch reef of the Central Paratethys. Preservation of the plates is such that a detailed comparison with the corresponding plates of modern relatives is possible. The middle Miocene assemblage is strikingly similar to modern coral-reef brittle-star communities on family level, and in most cases even on genus level. Almost all of the groups typically found in present-day coral-associated brittle-star communities could be unequivocally identified in the Miocene assemblage. Remarkably, even the relative abundances of the groups in the Miocene fauna are comparable to those found in modern equivalent communities. These observations imply that coral-associated brittle-star communities have remained largely unchanged since the last 15 Ma. In the light of recent hypotheses conferring a leading role to coral reefs in producing evolutionary innovation, the conservatism of brittle-star communities is puzzling and suggests that the mechanisms favouring high origination rates affect individual groups in different ways.

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Rare microfossils from the Shiala and Yong Formation of the Tethyan Garhwal Himalaya, India

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The present study reveals the occurrence of rare Paleozoic microfossils from the Shiala and Yong Limestone Formation. These Lower Paleozoic formations from the Garhwal-Kumaon Tethyan Himalaya are exposed closely to the international boundary with Tibet (China), near the village of Sumna (30°40' N, 80°50' E) located in the Chamoli district of the Garhwal Division, Uttar Pradesh. The Shiala Formation consist of four biostratigraphic zones based on macrofauna. Middle to Upper Ordovician age has been assigned to the Shiala Formation based on brachiopod or bryozoan assemblage zones. The Yong Limestone Formation overlies the Shiala Formation and was dated to be of Late Silurian age (Ludlovian) based on acritarch assemblage. The fresh rock samples collected from the base of the Shiala and Yong Formation were macerated by 40% HF. 7 Samples yielded a rich assemblage of diverse organic microfossils such as acritachs, chitinozoa, scolecodonts and melanoclerites. The organic-walled Melanosclerites have been reported from the Laurentia, Baltica and Laurasia cratons. They are exclusively marine and can be found in rocks from Cambrian to Devonian age. Melanosclerites have not been studied before from India.
This is the first report of this group of microfossil. Furthermore, the problematic microfossil Microancienta occurs in the Yong Formation. The systematic position is completely uncertain. Among other things, they are being compared to foraminifers. The axial-symmetrical microfossil is described from Upper Ordovician Öjlemyrflint erratic boulders of the Isle of Gotland/Sweden and of the Kaolinsand (Plio-/Pleistocene) of the Isle of Sylt/Germany.

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Upper Miocene continental trace fossils around Lake Pannon (Central Paratethys)

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Trace fossils are well known from marine deposits but comparatively few studies exist from terrestrial, fluvial or limnic environments. The Central Paratethys is a case in point, because many ichnological studies were performed in its Middle Miocene marine fossil record, but virtually nothing is known from the Upper Miocene continental environments in and around Lake Pannon. We studied five conspicuous trace fossil associations in the Vienna basin in Austria, Slovakia, Czech Republic and Hungary each restricted to a specific time horizon and palaeoenvironment. The oldest trace fossil associations (11.2 My) were studied at Atzelsdorf (Lower Austria). The small-scale structures (mm-cm sized) are only known from