that the marine-oligohaline-marine sequence was due to a sea-level change, which caused a vast regression in central Switzerland, and which was followed by a recurrent transgression.

On the basis of the lithostratigraphy and biostratigraphy, the Mauensee and Schmiedrued sections belong to the younger part of the Upper Marine Molasse and thus to the St. Gallen Formation. In eastern Switzerland, the St. Gallen Formation is generally subdivided into three small cycles, each of them starting with coarse conglomerate flows and ending with a regressive sequence of fine-grained clastics and a subsequent hiatus. The early Karpatian age of the Mauensee and Schmiedrued sections evidence their correlation with the third small cycle of the St. Gallen Formation. Consequently, the oligohaline intercalations can be interpreted as belonging to the regressive phase of that third small cycle. Thus, the overlying marine sequence may represent a fourth cycle in the St. Gallen Formation that might perhaps indicate a Karpatian transgression from the Mediterranean Sea, which has not previously been recognized.

Biostratigraphic comparison shows that the sedimentation of the Upper Freshwater Molasse began at the base of the Karpatian in southwest Germany and eastern Switzerland, and in the middle Karpatian in central Switzerland. The presence of a Karpatian marine sedimentation area in central Switzerland may explain that the terrestrial sedimentation of the Upper Freshwater Molasse began at such different times.

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DER TEUFEL LIEGT IM DETAIL – HISTOLOGISCHE VERÄNDERUNGEN PLEISTOZÄNER UND HOLOZÄNER SÄUGETIERKNOCHEN IM ZUGE DER KNOCHENDEKOMPOSITION

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Bei näherer Betrachtung der mikroskopischen Strukturen eines Knochens ist es möglich, Unterschiede zwischen frischem und fossilem Knochen festzustellen.

Bei den durchgeführten Untersuchungen werden die verschiedenen Kriterien der Veränderungen an histologischen Dünnschliffen im Einzelnen beschrieben um herauszufinden, in welchem Zusammenhang diese zueinander stehen. Zu diesen Kriterien zählen: das Auftreten von Mikrorissen im Bereich der Osteone, größere Risse innerhalb der Kompakta, die Anisotropie des Kompaktknochens, die Anisotropie der häufig verfärbten Außenbereiche des Knochens, die Verteilung der Verfärbungen, das Erscheinungsbild der Osteon-Lakunen und die Füllungen der Haversschen Kanäle.

Durch eine solche getrennte Betrachtung der unterschiedlichen Kriterien sollte es möglich sein zu erkennen, ob die verschiedenen Faktoren sich gegenseitig beeinflussen.
Auch die Zeit stellt einen Faktor dar, der die Knochendekomposition beeinflusst. Obwohl die hier bearbeiteten Knochen aus derselben Fundstelle stammen, weisen archäologische Begleitfunde darauf hin, dass auch die Knochen aus unterschiedlichen Zeitstufen stammen. Nach einer Altersbestimmung der Knochen wird es deshalb ebenso möglich sein, den Einfluss des Liegealters auf die Veränderungen eines Knochens abzuschätzen und so die mikroskopische Dekomposition zu rekonstruieren.

PRECAMBRIAN-CAMBRIAN SPONGE CRITICAL INTERVALL – INSIGHTS IN OLD ANIMALS

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Sponges are ancestral metazoans with a great geobiological importance. They are divided in two clades, the silica forming sponges (Hexactinellida & Demospongiae), and the Mg-calcite forming Calcarea (REITNER & MEHL, 1996). The fossil record traces back 1.8 Mrd.y based on chemofossils (MCCHAFFREY et al., 1994). Intriguing is that all main taxa of siliceous sponges harbour diverse microbial communities - demosponges Bacteria and hexactinellids Archaea. Therefore the sponge bauplan resembles to a complex biofilm anatomy (REITNER, 2004). The function and anatomy of sponge canal systems and biofilm water flow systems are very similar. It is assumed that the Precambrian stem group of sponges was a multicellular organism constructed of flagellate protozoans and microbes. First body fossils of sponges are known since the late Precambrian (Vendian) (DEBRENNE & REITNER, 2001; GEHLING & RIGBY, 1996; BRASIER et al., 1997; STEINER et al., 1993; REITNER & WÖRHEIDE, 2002; LI et al., 1998), and they are the first metazoans with an enzymatically controlled silica- and Ca-carbonate biomineralization beside the worm-like organisms *Cloudina*. The onset of biomineralization in the Vendian was linked with a deep global change after world wide glaciation events. Demospongiae are most probable the first advance sponge type. As a working hypothesis the Hexactinellida are derivated from the demosponge stock. All major sponge groups were evolved in the Lower Cambrian. Coralline sponges, sponges with secondary calcareous skeletons, were forming the first reefs in the lower Cambrian and main reef-building organisms till the Middle Cretaceous, the beginning of coralgal reefs. Today coralline sponges are “living fossils” from the Mesozoic and restricted to cryptic niches in tropical reefs and deep fore reef areas. They give important phylogenetic data and their skeletons are environmental proxy archives. Bacteria-rich sponges have a high potential of preservation under certain environmental circumstances. Calcareous sponges = Calcarea are known since the lower most Cambrian (REITNER, 1992; REITNER & MEHL, 1995). Spicules are formed by Mg-calcites and the overall biochemistry of the Calcarea differs significantly from the siliceous sponges. Based on 18s and 28sRNA genes the Calcarea exhibits more phylogenetic coincides with the Eumetazoa (Ctenophora, Cnidaria) (BORCHIELLINI et al., 2001; MEDINA et al., 2001). It is assumed that the Calcarea are the sister group of the Eumetazoa. Therefore, the sponges are may be a polyphyletic group.

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