## Multi-proxy analyses of bioapatites – Implications for palaeoecology, palaeoclimatology and bioarchaeology

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Both in palaeontology and archaeology, the study of bone and teeth is key to the understanding of the past as they represent direct evidence of life on Earth. The mineral present in bone and teeth (bioapatite – a highly substituted hexagonal calcium phosphate apatite) contains several elements that can be used to reconstruct palaeoenvironments, palaeodiets, mobility patterns, etc.

Every day, important advances are made in the study of bioapatites using a wide range of analytical methods such as stable isotopes ( $\delta^{13}C_{ap}$ ,  $\delta^{18}O_p$ ,  $\delta^{18}O_c$ ,  $^{87}Sr/^{86}Sr$ ), ICP-MS, FTIR and  $\mu$ XRF. The combination of the results provides important information on the state of preservation of the samples as well as information on the palaeoenvironment, palaeoclimate and/or palaeodiet of the analysed specimens.

Here, results from a wide range of bioapatites are presented highlighting the importance of multi-proxy analyses for the comprehensive overview of the state of preservation of the samples. As such, it is possible to select the best possible sample from which the most pristine information can be extracted for palaeoenvironmental reconstructions.