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# Habitat and ecology of red deer and horse from the high-altitude site of Montlléo (Catalonia, Spain) during the Magdalenian

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## Résumé

Montlléo is an open-air site located in the Cerdanya valley in the Pyrenees close to the river Segre and at 1134 m above sea level. Excavated since 2000 by the SERP team of the University of Barcelona, the site revealed an early Magdalenian occupation dated between 16,900 and 15,400 years BP (ca. 20,400-18,700 cal BP) coeval to the GS-2a phase, as well as a previous phase in the Final Solutrean around 18,800 years BP (ca. 22,800 cal BP; Mangado et al., 2019). The archeological investigation exposed a large range of lithic artefacts made of raw material of different origins, north and south of the mountains (Sánchez de la Torre et al., 2019), and introduced in the site as bulk or pre-formed shape (Fullola et al., 2012). Perforated molluscs of both Mediterranean and Atlantic origins confirm the strategic position of the site on a north-south and west-east raw material transit (Mangado et al., 2014). Faunal remains are dominated by horse (*Equus* sp.), red deer (*Cervus elaphus*) and small bovids (*Rupicapra rupicapra* and *Capra pyrenaica*), while rabbit is also represented (Mangado et al., 2015). Horse and red deer were likely the main source of meat for the early Magdalenian hunter-gatherers of Montlléo who may have exploited the position of the site to exploit both lower and upper parts of the Segre valley (Mas et al., 2018).

In this communication, we aim at reconstructing the diet and habitat of horse and red deer found from the Magdalenian occupation at Montlléo through isotopic investigation. We have conducted intra-individual sampling of enamel along molar teeth and measure the relative abundance of <sup>13</sup>C and <sup>18</sup>O in carbonate. The results should provide information on seasonal variation in diet and environment experienced by both species. In parallel, bones of horse

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and red deer were selected to extract collagen and perform  $^{13}\text{C}$  and  $^{15}\text{N}$  analysis. Bone collagen remodels over the life of the specimens and provides thus long-term information on diet and habitat of the animals. We will examine the possible niche partitioning between horse and red deer and potential differences in their habitat which will give insights into the hunting strategy of the Magdalenian human groups in mountainous areas.

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**Mots-Clés:** Habitat, ecology, red deer, horse, high, altitude site, Montlleó, Catalonia, Spain, the Magdalenian