

Proteomics for archaeology: identification of small bovid dental remains from Leopard Cave, Namibia

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Distinguishing between goat (*Capra hircus*) and sheep (*Ovis aries*) bone remains is a tricky task in zooarchaeology due to high morphological similarities. In austral Africa, the distinction between the two species could give information about the first introduction of domestic animals in prehistorical societies: were the herds mixed, were goats sent first as “brushcutter”?

Here, we report the use of proteomics on two molars and one premolar teeth identified as caprine and coming from the prehistoric site of Leopard Cave, Namibia (1). These remains were previously dated as the oldest of austral Africa (end of third millennium BC) by radiocarbon. Four modern samples of African small bovid (domestic and wild) were also included in the study for comparison.

We first estimated the collagen preservation on small amounts of tooth powder by infra-red spectroscopy ATR-FT-IR, using the method described in Lebon *et al.* 2016 (2). We then optimized the protein extraction based on a previously published protocol (3). The tryptic digest was analyzed using nanoLC-nanoESI-MS/MS and MALDI-MS. The resulted spectra were screened using Mascot and Peaks software.

Beside the identification of the two chains of type I collagen, two non-collagenous proteins were also identified. We could not discriminate between the species based on the collagen peptide detected, due to low sequence coverage of both chains. However, it seems that alpha 2 HS glycoprotein and secreted phosphoprotein 24 present more variations between the bovid species, which was not reported in any previous paper.

The results, although preliminary, suggest that the dental remains could in fact belong to a wild bovid species. Further analysis will be necessary in order to discriminate surely between the different bovid species of interest.

(1) Pleurdeau D. *et al.* 2012 *PloS ONE* 7 (7): e40340

(2) Lebon M. *et al.* 2016. *Radiocarbon*, 1-15.

(3) Buckley M. *et al.* 2010. *Journal of Archaeological Science* 37 (1): 13-20.