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Session: S6-B: Traceology in the 21st Century: Contributions to Archaeological Science and the Human Journey

For oral presentation

**What does the functional study of the lithic artefacts of a kill-butcher site tell us? A case study from the Gran Dolina TD10.2 subunit (Atapuerca, Spain)**

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Gran Dolina is one of the many karstic formations of the Sierra de Atapuerca located in Northern Spain. It has a long stratigraphic sequence composed of 11 lithostratigraphic units. Unit TD10 with its four sub-units (TD10.1-TD10.4) comprises the youngest evidence of human occupation covering a period from MIS11 to MIS 9.

TD10.2 is one of the richest subunits of the Gran Dolina site and has provided nearly 64,000 faunal and 12,000 lithic remains. The faunal assemblage is dominated by bison bones, for which the main accumulation is known as the *bison bone bed*. The zooarchaeological and taphonomic analysis of this assemblage revealed that the cave was used as a kill-butcher site and that this was the scenario of the first evidence of mass communal hunting practised by the pre-Neanderthal groups occupying the cavity (Rodr6guez-Hidalgo et al. 2017). The ongoing study of the lithic assemblage indicates almost exclusive use of the local chert (Neogene and Cretaceous) in the lithic production with scarce presence also of quartzite, quartz, sandstone and limestone. This extreme predominance of local chert has not been seen at any other level or site in Sierra de Atapuerca. The assemblage is composed mainly of flake products with high diversity of small flake tools and limited presence of large cutting tools. The refit connections indicate *in-situ* knapping activities focused mainly on flake production, and shaping and reshaping activities.

This study aims to present, for the first time, the functional analysis results of the TD10.2 lithic assemblage, which will complete and enrich the interpretations and discussion on the hominin high behavioural capacity and social complexity provided by the studies of the faunal and lithic assemblage of this subunit. The microwear study of

this assemblage is not an easy task given the poor preservation of the main raw material (i.e. chert). Indeed, these first results concern mainly to the artefacts made of Cretaceous chert, as they are fairly better preserved than the dominant Neogene variety. The selected pieces (retouched and unretouched flakes) were first screened by means of a low-power approach. After the screening, the best preserved pieces were chosen for detailed high-power approach microscopic analysis. Optical, 3D digital and scanning electron microscopes were jointly used for study and characterisation of use-wear traces. To reinforce interpretation of the archaeological traces, different experiments (i.e. butchery, hide, wood and bone working) were undertaken with both Atapuerca chert varieties. The study results show limited, but actual good preservation of use-wear traces in certain cases. Features related to longitudinal and transversal motions and working of soft and hard materials were identified. Based on this, mainly butchery-related activities were interpreted, although some bone, wood and hide working activities were evident too.

**Keywords:** Middle Pleistocene, Gran Dolina TD10.2, kill-butchnery site, use-wear traces

## References

- Rodríguez-Hidalgo, A., Saladié, P., Ollé, A., Arsuaga J.L., Bermúdez de Castro, J.M. and Carbonell, E. 2017. Human predatory behavior and the social implications of comunal hunting based on evidence from the TD10.2 bison bed at Gran Dolina (Atapuerca, Spain). *J. of Human Evolution*, 105, 89-122. <http://dx.doi.org/10.1016/j.jhevol.2017.01.007>.