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Integrating palaeoproteomics into the zooarchaeological analysis of Palaeolithic bone assemblages

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Propositions

Stellingen behorende bij het proefschrift “*Integrating palaeoproteomics into the zooarchaeological analysis of Palaeolithic bone assemblages*”, te verdedigen door Virginie Sinet-Mathiot, 23.03.2023, Universiteit Leiden.

1. The taxonomic identification through ZooMS of the morphologically unidentifiable bone component from Palaeolithic faunal assemblages can provide new insights on past hominin subsistence behaviour.
2. Interpretations based on the categorisation of morphologically unidentifiable bone specimens into body size classes should be used with caution.
3. The potential impact of so-called non-destructive proteomic extraction techniques on the micromorphology of bone surfaces should be assessed prior to advocating their widespread use on rare archaeological materials.
4. The assessment of Palaeolithic faunal assemblages can be complemented with ZooMS analyses in order to have a more complete picture of faunal composition and assemblage formation, especially if the dominant taxa is easily morphologically identifiable.
5. The development of the applicability of ZooMS in Palaeolithic contexts provide the opportunity to identify the biological markers preserved in various fragmented archaeological specimens, and constitute a powerful tool particularly when used in conjunction with other methodologies.
6. Further quantitative integration of ZooMS identifications into standard zooarchaeological investigation of faunal assemblages necessitates a better comparability of the metrics employed for both bone components and more specifically the development of methods for quantifying ZooMS identified fragments.
7. The quality of the taxonomic identification depends heavily on the richness of the library of references. Further development of the library, built upon modern and extinct

species from around the world, as well as the integration of LC-MS/MS-based species identification approaches will help expand the resolution of the identification and greatly enhance our understanding of hunting strategies and palaeoenvironmental conditions during hominin occupation.

8. Although ancient DNA approaches offer greater taxonomic resolution, MALDI-TOF mass spectrometry collagen peptide mass fingerprinting is more affordable and has sufficient taxonomic resolution to answer many archaeological questions, making it more accessible to researchers of all disciplines.
9. Publishing in Open Access journals allows for a more worldwide equitable access to research.
10. In an outcome-driven academic culture, parenthood and more specifically motherhood has an unequal impact on research productivity. Social policies should also recognize the long-term social, scholarly, and individual value of supporting work-life balance for both mothers and fathers.