Dr. Louise LE MEILLOUR

MSCA postdoctoral fellow
PhD in bioarchaeology

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Date of birth: October 12th, 1990
Nationality: French
Married, one child (born 2022)

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Research highlights

My interests lie in applying biomolecular approaches to archaeological questions. I pioneered and developed the application of palaeoproteomics to the study of herding practices in prehistoric arid environments of Africa and the Near East and for that, have optimized suited proteomic extraction protocols for remains from arid and semi-arid contexts, as well as demonstrated the particular efficiency of the method in the highly degraded contexts of African and Levantine archaeological sites. I have focused on the incorporation of domesticated caprines into hunter-gatherers societies and have reflected on the extent to which extreme environmental conditions (Younger Dryas, Little Ice Age) might have played a role in early herding practices. I have a strong record of scientific communications, student supervision and mentoring, as well as securing prestigious funding. I have developed a strong interest in **combining knowledge acquired through archaeological sciences to better understand and manage our future**.

Keywords

ancient proteins · domestication · Prehistory · constrained environments

Main collaborations
(national and international)

African archaeology, curation and theories:
L. Chaix & J.C. Castel, Univ. Geneva; B. Vanmontfort & P. van Peer, Univ. Leuven; A. Leplongeon, Univ. Connecticut; P. Bangsgaard, Univ. Copenhagen; M. Prendergast, Rice Univ.; M. Katongo, NMZ; V. Phiri, Livingstone Museum; P. Mitchell, Univ. Oxford; A. Henderson, McGregor Museum; C. Bourdier, Univ. Toulouse; G. Bader, Univ. Tüebingen; C. Ogola, NMK; J. Lesur, AASPE; C. Mulenga, Livingstone Museum; E. Yvanez, Univ. Copenhagen; D. Stynder, L. Hutten & J. Parkington, Univ. Cape Town; S. Rhodes, Univ. of Algarve; A. Val, CNRS; K. Efraim, NMN; D. Pleurdeau, HNHP; W. Archer, NMB; Dino J. Martins & C. J. Jones, Turkana Basin Institute.
Biomolecular archaeology:
M. J. Collins, Univ. of Cambridge, Univ. Copenhagen &; H. Fewlass, Univ. of Bristol; F. Welker, Univ. Copenhagen; K. Daly, Univ. College Dublin.
Palaeoparasitology:
B. Rotureau, Pasteur Institute.
Mass spectrometry:
S. Zirah, MCAM; R. Cramer, Univ. of Reading

Education & Employment

09/2023-08/2025

Marie Skłodowska-Curie Post-doctoral Fellow, project "ICARHUS. Identifying Constraints: Ancient protein characterisation to Reveal past Human Subsistence adaptations to climate change". The project aims to reveal past Levantine human societies adaptation to environmental pressures. Awarded from Sept. 2023 to Aug. 2025. Supervision: Dr. Frido Welker. Section for Molecular Ecology and Evolution, Globe Institute, University of Copenhagen, Denmark.

12/2021-04/2022

Maternity leave (unpaid)

10/2021-09/2023

Fyssen Foundation fellow (Guest researcher), project "Looking for constraints: identifying ancient biomolecules in arid environments to unravel past human adaptations to climate change". Awarded from Oct. 2021 to Sept. 2023. Supervision: Prof. Matthew Collins & Dr. Frido Welker. Section for Evolutionary Genomics, Globe Institute, University of Copenhagen, Denmark.

10/2017-03/2021

Doctorate, PhD in archaeology and biochemistry (bioarchaeology). "**Contribution of palaeoproteomics to the documentation of caprines herding diffusion between Eastern and Southern Africa**". Co-financed by the DIM MAP (Ile-de-France region) and the Museum national d'Histoire naturelle (MNHN), Paris, France. Under the supervision of Dr. J. Lesur (UMR AASPE), Dr. S. Zirah (UMR MCAM) and Dr. A. Zazzo (UMR AASPE) and the tutoring of Dr. D. Pleurdeau (UMR HNHP). **Awarded after public defence on March 22nd, 2021.** Panel composed of Prof. M. J. Collins, Dr. M. Prendergast, Dr. L. Orlando, Prof. K. Sadr & Prof. C. Tokarski (Chair).

2015-2017

Master's degree 'Evolution, Natural Patrimony and Societies', specialty 'Quaternary and Prehistory', MNHN, Paris, France. Honors *Magna Cum Laude*. Two internships in Palaeoproteomics, supervision: Dr. A. Zazzo (AASPE), S. Cersoy (USR CRC), D. Pleurdeau (HNHP).

2012-2015

Bachelor's degree in History of Art and Archaeology, Sorbonne Université (Faculté des Lettres), Paris, France. Honors *Cum Laude*. Internship in Zooarchaeology, Supervision: Dr. M. Pathou-Mathis (HNHP) & Dr. L. Crépin (HNHP).

Awards

(Submitted Oct. 15th, 2024. Results 1st round expected in March 2025; 2nd round August 2025)

ERC Starting Grant

DAMARA. Dynamics of the Adoption of livestock and associated Modalities: bioArchaeology to document the Roots of African pastoralism.

The DAMARA project seeks to unravel the influence of African environments on domesticated Caprinae early herding practices. Using an innovative methodological approach combining zooarchaeology, palaeoproteomics, palaeoparasitology, lithics, rock art studies, ancient DNA, radiocarbon dating and near-infrared spectroscopy, DAMARA will draw attention on Holocene African archaeological heritage. The project gathers 30+ collaborators and local institutions from Europe (FR, DK, UK, DE, BE, IR), the US and Africa (12 countries).

Project submitted in the SH6 panel of the ERC.

If granted, the project could start as early as end of 2025, or as late as October 2026.

1 500 000€ - PI: Dr. L. Le Meillour

2023-2025

MSCA post-doctoral fellowship

Project "ICARHUS. Identifying Constraints: Ancient protein characterisation to Reveal past Human Subsistence adaptations to climate change"

The project focuses on Levantine sites where palaeoproteomics will be employed both to assess shifts in subsistence strategies due to major climate events (species assessment) and herd composition (sex-ratio).

The project started in Sept. 2023 for a duration of two years, until Aug. 2025.

European Union – Marie Skłodowska-Curie Actions (MSCA-PF-EF)
230,774.40€ - grant agreement number #101062449
PI: Dr. L. Le Meillour, advisor: Dr. F. Welker

2021-2023

Post-doctoral grant
Project "Looking for constraints"
The project focuses on Eastern African sites where palaeoproteomics is employed to identify potential shifts in subsistence strategies in regard with climatic constraints.
Fyssen Foundation (France)
80 000€ - awarded to Dr. L. Le Meillour
Advisors: Prof. M. J. Collins & Dr. F. Welker

2017-2021

PhD scholarship
Project IBAAM
½ DIM MAP, Région Ile-de-France (France) and ½ Ministère de l'Enseignement Supérieur et de la Recherche (France)
120 000€
Supervision: Dr. A. Zazzo, Dr. J. Lesur, Dr. S. Zirah, Dr. D. Pleurdeau
Contribution: designed project, writing first draft of project, reviewing with input of all participants (IBAAM) – success in the competitive examination for second half of funding (75 candidates, 13 scholarships awarded).

2019-2020

Grant "PEPS CNRS EcoMob"
Project D2CAP
Centre National de la Recherche Scientifique (CNRS, France)
15 000€
PI: Dr. A. Zazzo
Contribution: designed project, writing draft of project, reviewing with input of all participants, managing awarded money (lab costs, purchase of consumables, etc.), meeting animation with interdisciplinary team.

2017-2018

Experimental grant "ATM"
Project TopArch
Muséum national d'Histoire naturelle (France)
7 200€
PI: Dr. A. Zazzo
Contribution: designed project, writing draft of project, reviewing with input of all participants, performed project, managed awarded money (mass spectrometry costs, purchase of consumables, etc.), meetings animation with interdisciplinary team.

2016-2017

Experimental grant "ATM"
Project ProtéArch
Muséum national d'Histoire naturelle (France)
6 500€
PI: Dr. D. Pleurdeau
Contribution: designed project, writing draft of project, reviewing with input of all participants, performed project, managed awarded money (equipment of lab, analyses costs, etc.), meeting animation with interdisciplinary team.

2016-2017

Master scholarship
Project ProtéArch
Laboratory of Excellence (LabEx) "BCDiv" (France)
3 000€
PI: Dr. D. Pleurdeau
Contribution: designed project, writing draft of project, reviewing with input of all participants, realized 5 months of internship.

Publications

Submitted/under review

Vautrin A., Bosch D., Balasse M., Bray F., Bruguier O., Fiorillo D., **Le Meillour L.**, Marro C., Mashkour M., Berthon R., Studying pastoral practices during the Neolithic in the south Caucasus: zooarchaeology and isotopic analyses (δ18O, δ13C, 87Sr/86Sr) of Caprinae from Kültepe I (Nakhchivan, Azerbaijan), under review sine June, 2024, *Paléorient*.

Contribution: I sampled and extracted preserved proteins from one of the specimens of Kültepe I that presented an usual morphology. I analysed shotgun mass spectrometry data using the Bovidae database published along with Le Meillour et al. 2023 and identified the specimen as belonging to the genus *Gazella*. I reviewed the paper and deposited all mass spectrometry data in PRIDE.

Purpose: Highlight specific pastoral practices of domesticated caprines during the Neolithic in the Caucasus using various methods of archaeological sciences to enhance our comprehension of early adoption of pastoralism.

Nyambiya H., **Le Meillour L.**, Parkington J., Rhodes S. E., Hutten L. & Val A., Effects of the introduction of sheep on subsistence strategies of Late Holocene hunter-gatherers in the Western Cape of South Africa: a review of the zooarchaeological record, under review, *Southern African Field Archaeology*.

Contribution: We co-conceived the study with our PhD student, H. Nyambiya, the first author. He was responsible for gathering data regarding the adoption of domestic sheep in the Western Cape of South Africa, compile zooarchaeological evidence and writing the manuscript. I edited the manuscript at all stages.

Purpose: Perform a literature review of all archaeological sites in the Western Cape of South Africa where the presence of domestic sheep has been attested in faunal assemblage. Report evidence of cut-marks, and any taphonomic process that could inform about subsistence practices. Compiling all data to identify potential shifts in subsistence strategies consecutive to the adoption of herding practices.

Peer reviewed

Welker F., Ásmundsdóttir R. D., Mylopotamitaki D., Torres Iglesias L., Villa Islas V., **Le Meillour L.**, Fagernäs Z., Palaeoproteomic contributions, and current limitations, to understanding Middle and Late Pleistocene human evolution, accepted in *PaleoAnthropology*.

Contribution: Review paper. I wrote parts of the Zooarchaeology, Enamel Sexing and Pre-screening sections. I reviewed and edited the manuscript with co-authors during the review process.

Purpose: Review existing literature on the use of palaeoproteomics methods (both shotgun and ZooMS) to the study of Pleistocene human evolution.

Rey-Iglesia A., Pryor A., Wilson T., Teeter M., Margaryan A., Khaskhanov R., **Le Meillour L.**, de Jager D., Troché G., Welker F., Szpak P., Dudin A. E., Lorenzen E. D., **2025**. Ancient biomolecular analysis of 39 mammoth individuals from Kostenki 11-Ia elucidates Upper Palaeolithic human resource use, *Quaternary Environments and Humans*, 3:1, 100049, https://doi.org/10.1016/j.qeh.2024.100049.
Available on bioRXiv: https://www.biorxiv.org/content/10.1101/2024.06.14.598638v1

Contribution: I was in charge of preparing enamel proteome extraction prior to mass spectrometry analyses for sexing the mammoths that failed ancient DNA.

Purpose: Improve our knowledge concerning mammoths exploitation for the construction of monumental structures at Kostenki 11-Ia using aDNA, direct radiocarbon dating, stable isotopes, and palaeoproteomics approach.

Le Meillour L.*, Sinet-Mathiot V.*, Ásmundsdóttir R. D., Hansen J., Mylopotamitaki D., Troché G., Xia H., Herrera Bethencourt J., Ruebens K., Smith G. M., Fagernäs Z. & Welker F. **2024**. Increasing sustainability in palaeoproteomics by optimising digestion times for large-scale archaeological bone analyses. *iScience*, 27:4, 109432, https://doi.org/10.1016/j.isci.2024.109432.

*these authors contributed equally to the work

Contribution: I co-conceived the study along with V. Sinet-Mathiot and F. Welker, and co-lead study conduction and data analysis. I co-wrote the manuscript with input from all authors. Finally, I was responsible for the manuscript during review and publication steps.

Purpose: Identify if, by reducing the time we digest extracted proteins from archaeological bones, data quality (taxonomic identifications, amongst others) would be affected. We proved that by diminishing the duration of palaeoproteomics digestion step from 18 to 3 hours, we observed no statistical impact on

our data quality. In addition, we show that by only digesting for 3 hours, we substantially reduce our electricity consumption and subsequent CO_2 emissions by 83%.

Le Meillour L., Zazzo A., Zirah S., Tombret O., Barriel V., Arthur K. W., Arthur J. W., Cauliez J., Chaix L., Curtis M. C., Gifford-Gonzalez D. , Gunn I., Gutherz X., Hildebrand E., Khalidi L., Millet M., Mitchell P., Studer J., Vila E., Welker F., Pleurdeau D.* & Lesur J.*. **2023**. The name of the game: palaeoproteomics and radiocarbon dates further refine the presence and dispersal of caprines in eastern and southern Africa. *Royal Society Open Science*. https://dx.doi.org/10.1098/rsos.231002.

*these authors contributed equally to the work

Contribution: I conceived the study, performed specimen selection and sampling, performed all laboratory work and optimized protein mass spectrometry acquisition strategies. I performed all data analysis steps independently and wrote the manuscript with input from all the authors. Finally, I was responsible for the manuscript during review and publication procedures.

Purpose: Conduct the first large-scale study in eastern and southern Africa using proteomics and direct dating. We used molecular species identification and direct dating of identified domesticates specimens to refine our understanding of caprines husbandry practices between two regions that have proved to have extensive links from the introduction of domesticated animals.

Jensen T. Z. T., Yeomans L., **Le Meillour L.**, Nielsen P. W., Ramsøe M., Mackie M., Bangsgaard P., Kinzel M., Thuesen I., Collins M. J. & Taurozzi A. J. **2023**. Tryps-In: A Streamlined Palaeoproteomics Workflow Enables Zooms Analysis of 10,000-Year-Old Petrous Bones from Jordan Rift-Valley. *Journal of Archaeological Science Reports*, **52**, 104238. https://doi.org/10.1016/j.jasrep.2023.104238.

Contribution: I analysed ZooMS and LC-MS/MS data of 12 archaeological samples, perform species assignation and wrote the paper with other authors.

Purpose: Development of a streamlined protocol for highly degraded bones from arid environments. The protocol was specifically developed on petrous bones from the 10,000 years old Jordanian site of Shkarāt Msaied and proved the increased recovery of ancient preserved proteins, allowing species assignation of the remains.

Le Meillour L., Zirah S., Zazzo A., Cersoy S., Détroit F., Imalwa E., Lebon M., Tombret O., Pleurdeau D. & Lesur J. **2020**. Palaeoproteomics gives new insights into early southern African pastoralism. *Scientific Reports*, **10**, 1-11. https://doi.org/10.1038/s41598-020-71374-3.

Contribution: I designed the study, performed specimen selection, performed all laboratory work and optimized protein mass spectrometry acquisition strategies. I performed all data analysis steps independently and wrote the manuscript with input from D. Pleurdeau and all other authors. Finally, I was responsible for the manuscript during review and publication procedures.

Purpose: Apply the gained proteomics protocol to investigate caprine husbandry in Holocene Namibia, changing the perception on early/late introduction of domesticated species.

Lesur J., **Le Meillour L**. **2019**. Moutons et chèvres à la conquête des déserts africains. Actes des XXXVIII[e] Rencontres d'Histoire et d'Archéologie de la ville d'Antibes, sous la dir. de Gourichon L., Daujeard C., Brugal J.-P., APDCA eds., Antibes, pp. 173-188.

Contribution: I co-presented the work at the conference, wrote half-part of the paper and reviewed it entirely with my co-author.

Purpose: Present the use of performing palaeoproteomics analyses when studying domestic caprines introduction and diffusion in Africa to a non-specialist audience. Review of the palaeoproteomics field and of vulgarisation of 2018 paper (Le Meillour et al. 2018).

Le Meillour, L., Zazzo, A., Lesur, J., Cersoy, S., Marie, A., Lebon, M., Pleurdeau D. & Zirah, S. **2018**. Identification of degraded bone and tooth splinters from arid environments using palaeoproteomics. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 511, 472-482. https://doi.org/10.1016/j.palaeo.2018.09.013.

Contribution: I designed the study, including determining extraction protocol variants and related literature research. Subsequently, I performed laboratory work independently and optimized protein mass spectrometry acquisition strategies. I performed all data analysis steps independently and wrote the manuscript with input from all the authors. Finally, I was responsible for the manuscript during review and publication procedures.

Purpose: Establish an extraction and analytical protocol suitable for remains from Holocene arid environments. Prior to this, no ancient protein analysis had been performed at the MNHN yet, and at the

date of publication, no palaeoproteomics studies were published on applying the method on southern African bone remains.

Not peer-reviewed

Le Meillour L., Bangsgaard P., Yeomans L., Troché G., Olsen Jesper V., Richter T., Collins Matthew J., Welker F., **2023**. *Looking for constraints: exploring proteins characterisation in arid environments to unravel past human adaptations to climate change*. End of project report for the Fyssen Foundation. Written in the form of a scientific paper, accessible on HAL: https://hal.science/hal-04875971.

Public outreach

Le Meillour L. & Pleurdeau D. *Comment les protéines font parler les restes archéologiques*. Archéologia, October 2020, vol. 591, pp. 14-15.

Le Meillour L. Interview for F. Bardou article, *"Homo antecessor", notre très vieux cousin à la dent dure*. Libération, April 7th, 2020, https://www.liberation.fr/sciences/2020/04/07/homo-antecessor-notre-cousin-a-la-dent-dure_1784459/#

Reviewer activity

Academic peer-review: *Journal of Proteome Research* (2020-2021), *Royal Society Open Science* (2021), *Journal of Human Evolution* (2022-2023), *L'Anthropologie* (2023)

Grants: external referee for the European Research Council (ERC Consolidator grant, 2023)

Recommendations

Since 2023, I am a recommender for the open access Peer Community in Archaeology (PCI Archaeology https://archaeo.peercommunityin.org/) and as such, I act as an "editor" on the submitted papers in my discipline or adjacent topics. Every recommendation I make is based on external reviews and gets its own DOI.

Le Meillour, L. (2024) Exploring eastern Mediterranean Iron Age coastal connections through sheep astragali using geometric morphometrics. *Peer Community in Archaeology*, 100457. https://10.24072/pci.archaeo.100457

Le Meillour, L. (2023) Detection of plant-derived compounds in XIXth c. Dutch dental calculus. *Peer Community in Archaeology,* 100389. https://doi.org/10.24072/pci.archaeo.100389

Open datasets

In line with recommendations in the field of (ancient) proteomics, both raw and processed protein mass spectrometry data related to my publications are publicly available in the ProteomeXchange repository.

PXD045027 is associated with Le Meillour, Sinet-Mathiot et al. *iScience* paper.
PXD045452 and doi:10.5061/dryad.xd2547dnw are associated with Le Meillour et al. *RSOS* paper.
PXD045412 is associated with Jensen et al. *J. Arch. Sci. Rep.* 2023 paper.
PXD010725 is associated with Le Meillour et al. *Sci. Rep.* 2020 paper.
PXD017519 is associated with Le Meillour et al. *Pal., Pal., Pal.* 2018 paper.

Protocols

The protocol associated with Le Meillour et al. *Pal., Pal., Pal.* 2018 is accessible on the protocols.io repository using the following DOI: dx.doi.org/10.17504/protocols.io.yxmvmn1kog3p/v1.

Reports

Le Meillour L., « Palaeoproteomics analyses » in Pleurdeau D. *et al*. 2017-2022. Rapport d'activité pour le Ministère des Affaires Etrangères et du Développement International de la Mission Archéologique en Namibie (MANam). Field mission report.

Conference presentations

Oral – speaker is underlined

Le Meillour L., *Intéractions Hommes-Environnements en milieux arides : Perspectives Paléoprotéomiques*, Research Seminar of Montpellier Institute of Evolutionary Sciences (UMR 5554 CNRS-IRD-CIRAD-INRAP-U. Montpellier-EPHE), online seminar, December 12th, 2024 (**invited speaker**).

Le Meillour L., *Compter les moutons dans le désert : apport des méthodes moléculaires à l'étude des pratiques d'élevages à l'Holocène*, Séminaire « Moutons », org. Dr. A. Val, LAMPEA, December 9th, 2024, Aix-en-Provence, France (**invited speaker**).

Welker, F.**,** **Le Meillour L.**, Sinet-Mathiot V., Ásmundsdóttir R. D., Hansen J., Mylopotamitaki D., Troché G., Xia H., Herrera Bethencourt J., Ruebens K., Smith G. M., Fagernäs Z. & Welker F. *Increasing sustainability in palaeoproteomics by optimising digestion times for large-scale archaeological bone analyses*, 2nd IZAZ conference, November 19th-21st, 2024, Collège de France, Paris, France.

Le Meillour L., L'Hôte L., Bangsgaard P., Yeomans L., Zeder M., Richter T., Darabi H., Welker F. , Daly K., *Building -ovicaprines- bridges: combined palaeogenomic and palaeoproteomic analysis for the study of Caprinae early domestication*, European Association of Archaeologists (EAA), August 31st, 2024, Rome, Italy.

Le Meillour L., Sinet-Mathiot V., Ásmundsdóttir R. D., Hansen J., Mylopotamitaki D., Troché G., Xia H., Herrera Bethencourt J., Ruebens K., Smith G. M., Fagernäs Z. & Welker F. *Towards sustainability in palaeoproteomics? A digestion time comparison for cost and electricity reduction in palaeoproteomic analyses.* Globe Institute Symposium on Origin, Evolution and Ecology of Life, April 8th, 2024, Copenhagen, Denmark.

Le Meillour L., *Intéractions Hommes-Environnements : Perspectives Paléoprotéomiques*, Research Seminar of "Natural History of Prehistoric Humans" lab (UMR 7194 MNHN-CNRS), Musée de l'Homme, Paris, France, April 3rd, 2024 (**invited speaker**).

Le Meillour L., *On the importance of sheep and goats characterization in Sudanese faunal assemblages: a little help from ancient proteins*, Seminar on Pastoral Practices in Ancient Sudan, ERC "Fashioning Sudan" (PI: Dr. E. Yvanez), Copenhagen, Denmark, January 29th, 2024 (**invited speaker**).

Le Meillour L., Bangsgaard P., Yeomans L., Collins M. J. & Welker F., *Identifying the constraints: looking for subsistence adaptations in regards to climatic events in arid environments*. 10th AGPM ICAZ working group, Oct. 11th-13rd, 2023, Munich, Germany.

Le Meillour L., Sinet-Mathiot V., Ásmundsdóttir R. D., Hansen J., Mylopotamitaki D., Troché G., Xia H., Herrera Bethencourt J., Ruebens K., Smith G. M., Fagernäs Z. & Welker F. *Towards sustainability in palaeoproteomics? A digestion time comparison for cost and electricity reduction in palaeoproteomic analyses.* 23rd ESHE meeting, Sept. 21st-23rd, 2023, Aarhus, Denmark.

Le Meillour L. *Constraining the animals: looking for subsistence adaptations in regards to climatic events in Jordan and Sudan*. 24th GMPCA international meeting - Groupement des Méthodes Pluridisciplinaires Contribuant à l'Archéologie -, April 17th-21st, 2023, Nice, France.

Le Meillour L. *Bovids in the desert*. Palaeoproteomics group meeting, University of Copenhagen, Denmark, May 5th, 2022 (**invited speaker**), hybrid meeting.

Le Meillour L. *Unravelling past subsistence strategies in arid environments: insights from bioarchaeology*. 5th Science & Archaeology Seminar, University of Copenhagen, Denmark, November 24th , 2021, (**invited speaker**).

Le Meillour L., Lesur J., Barriel V., Pleurdeau D., Zazzo A. & Zirah S. *Type I collagen of African small wild bovids:* de novo *sequencing and implications for species identification using palaeoproteomics*. 9th meeting of the 'Archaeozoology, Genetics, Proteomics and Morphometrics' (AGPM) working group of the International Council of Archaeozoology, Oulu, Finland, September 23th-24th, 2021, virtual.

Gifford-Gonzales D., **Le Meillour L.** & Lesur J. *New radiocarbon dates for two Pastoral Neolithic sites in south-central Kenya*. "Exploring mobility in African archaeology" session of the 25th SAfA conference, September 15th, 2021, virtual.

Le Meillour L. *From molecules to animals: using ancient proteins to document human-animals interactions in Africa*. Journée d'étude du réseau CAI-RN « Analyses moléculaires des matières organiques en archéologie et sciences du patrimoine : un état de la question », Paris, November 22nd, 2019 (**invited speaker**).

Le Meillour L., Pleurdeau D., Lesur J., Zirah S. & Zazzo A. *'Of sheep and men' ? How ancient proteins can document African Later Stone Age subsistence strategies*. 8th meeting of the 'Archaeozoology, Genetics, Proteomics and Morphometrics' (AGPM) working group of the International Council of Archaeozoology, Paris, October 17th-18th, 2019.

Le Meillour L. *Apports de la biochimie aux problématiques archéologiques*. Journée annuelle du DIM Matériaux Anciens et Patrimoniaux, Paris, January 16th, 2019.

Le Meillour L. *Presentation of the 'IBAAM' PhD project*. Journée des jeunes chercheurs du DIM Matériaux Anciens et Patrimoniaux, Paris, December 6th, 2018.

Lesur J. & **Le Meillour L**. *Moutons et chèvres à la conquête des déserts africains*. Rencontres d'Archéologie et d'Histoire de la ville d'Antibes, Colloque 'Hommes et Caprinés', Antibes, France, October 16th-18th, 2018.

Le Meillour L., Lesur J., Cersoy S., Marie A., Lebon M. Pleurdeau D., Zirah S. & Zazzo A. *«To be pastoralist or not to be ?» Tracing the introduction of domestic caprines in Southern Africa using Palaeoproteomics*. 24th Society of Africanists' Archaeologists conference, Toronto, Canada, June 19th, 2018.

Le Meillour L., Cersoy S., Zirah S., Lebon M., Lesur J., Pleurdeau D., Zazzo A. *Recovering bone proteins in arid environment using palaeoproteomics*. 8th Bone Diagenesis Meeting, Oxford, UK, September 2017.

Le Meillour L., Cersoy S., Zirah S., Marie A., Lebon M., Lesur J., Le Danvic C., Pleurdeau D., Nagnan-Le Meillour P., Zazzo A. *Tracing the introduction of domestic animals in Austral Africa using palaeoproteomics*. Oral comm., 4th Young Natural History scientists' Meeting, Paris, France, February 2017.

Le Meillour L., Cersoy S., Zirah S., Marie A., Lebon M., Lesur J., Le Danvic C., Pleurdeau D., Nagnan-Le Meillour P., Zazzo A. *Palaeoproteomics for archaeology: identification of small bovids dental remains from Leopard Cave, Namibia.* « Club Jeunes » of the 33èmes 'Journées de la Société Française de Spectrométrie de Masse', Bordeaux, France, September 2016.

More than 10 presentations during the seminars of UMR 7245 (MCAM) team 'BIM' (dir. Dr. Y. Li) and UMR 7209 (AASPE) team 'SAPOA' (dir. M. Mashkour until January 2019, then J. Lesur); oral presentation during the young scientists day of UMR 7245 (December 2017).

Poster – presenter is underlined

Le Meillour L.*, Sinet-Mathiot V.*, Ásmundsdóttir R. D., Hansen J., Mylopotamitaki D., Troché G., Xia H., Herrera Bethencourt J., Ruebens K., Smith G. M., Fagernäs Z. & Welker F. 2023. *Towards sustainability in palaeoproteomics? A digestion time comparison for cost and electricity reduction in palaeoproteomic analyses.* 10th ISBA meeting, Tartu, Estonia, *co-first authors.

Le Meillour L., Zirah S., Lesur J., Lebon M., Pleurdeau D., Zazzo A. 2019. *Recovering bone and tooth proteins in arid environments using palaeoproteomics, a case study in the Late Stone Age site of Toteng, Botswana*. Scientific Symposium Frontiers in Heritage Science, Paris, France.

Le Meillour L., Zazzo A., Cersoy S., Marie A., Lebon M., Lesur J., Le Danvic C., Pleurdeau D., Nagnan-Le Meillour P., Zirah S. 2017. *Tracing the introduction of domestic small bovids in Austral Africa using palaeoproteomics*. SMMAP, Marne-la-Vallée, France.

Le Meillour L., Cersoy S., Zirah S., Marie A., Lebon M., Lesur J., Le Danvic C., Pleurdeau D., Nagnan-Le Meillour P., Zazzo A. 2017. *Proteomics for archaeology: identification of small bovids dental remains from Leopard Cave, Namibia*. 4th Young Natural History scientists' Meeting, Paris, France.

Le Meillour L., Cersoy S., Zirah S., Marie A., Lebon M., Lesur J., Le Danvic C., Pleurdeau D., Nagnan-Le Meillour P., Zazzo A. 2016. *Proteomics for archaeology: identification of small bovids dental remains from Leopard Cave, Namibia*. 33rd 'Journées de la Société Française de Spectométrie de Masse', Bordeaux, France.

Conference organization

2025

Archaeozoology, Genetics, Proteomics, and Morphometrics working group (AGPM) of the International Council of Archaeozoology (ICAZ).
Member of the Organizing Committee. Globe Institute, University of Copenhagen, Denmark.
Contribution: Part of the restraint organising committee in charge of setting the whole conference for 100+ researchers to attend (organisation started Feb. 2024).

2024

European Association of Archaeologists (EAA) annual meeting.
Session organiser #699: *Tracing Ovicaprine Lives: Bioarchaeological Perspectives on Sheep and Goat Husbandry*
Contribution: Organised the entire session along with L. Viñas-Caron, K. Daly and J. Holm-Jæger (abstract submission for the session, review of proposed papers, setting up schedule for the communication and present for the session).

2019

Archaeozoology, Genetics, Proteomics, and Morphometrics working group (AGPM) of the International Council of Archaeozoology (ICAZ).
Member of the Organizing Committee. MNHN, Paris, France.
Contribution: review of submitted abstracts, managing of conference website, organisation of programme, editing of the booklet, welcoming of participants, organisation of gala dinner.

2018

Young Natural History scientists' Meeting (YNHM).
Head of Session "Humanities and Natural Science". MNHN, Paris, France.

Fieldwork

2017 - current

Member of the Franco-Namibian archaeological mission MANam (dir. D. Pleurdeau).
Prehistory – Holocene – First herding practices – Rock Art – Material Culture - Bioarchaeology
One month (more or less) of excavations and prospections every year in the Erongo region, Namibia.

2010

Excavator
Prehistory
One-month excavations at Caune de l'Arago (dir. H. de Lumley), Tautavel, France.

Teaching

2024

4 hours of Lecture "ZooMS" and "Introduction to proteomic data analysis" for the MSc course "Proteins from the Past: Palaeoproteomics Methods" - University of Copenhagen, Denmark

2023

3 hours of Lecture "Biomolecular archaeology" for Bachelor students in Archaeology (course organisation Dr. L. Yeomans, "Post-Excavation archaeology") – University of Copenhagen, Denmark

2*3 hours of Lecture "Data Analysis" for attendees to the Palaeoproteomics Summer School – University of Copenhagen, Denmark

2022

2 hours of Lecture "Palaeoproteomics" for Master students in Archaeology (with Dr. Z. Fagernäs) – University of Copenhagen, Denmark

2017-2020

32 hours of classes per academic year (sept.-june). Lectures in two different specialties of the MNHN Master's degree: Mécanismes du Vivant et Environnement ('Living mechanisms and Environment') and Quaternaire et Préhistoire ('Quaternary and Prehistory). Courses tought: 3h in Proteomics – 'Biochemistry applied to Archaeology' lecture; 16h in Biology applied to Archaeology – 'Paleoproteomics' lecture (3h), 'Basics in Biology' and 'Article analyses in proteomics and lipidomics' tutorials (2*3h), final exam surveillance (3h); 3h in Archaeometry – "Bone and tooth organic phase"; 5h in Mass spectrometry – 'Mass spectrometry data understanding' tutorials (2*2,5h); 9h in Microbiology – Microbiology practical work.

Supervision

PhD student supervision

Humphrey Nyambiya (Univ. do Algarve, Portugal, 2022-2025). Co-supervision with Dr. S. Rhodes (Univ. Algarve) and Dr. A. Val (LAMPEA, CNRS). Defense planned in late 2025.

Master's students supervision

Pauline Poujois (2022, INSA, Toulouse). *Levantine, Sudanese and Namibian bovids identification using palaeoproteomics*. PI: Dr. L. Le Meillour & Dr. F. Welker.
Contribution: study was part of my Fyssen project, supervised bibliographic research, lab work, edit and review thesis, help in thesis presentation (poster).

Chloé-Célya Chulem-Chaya (2021, MNHN, Paris). *Analyse paléoprotéomique de pointes en os des sites Later Stone Age de Leopard Cave et Seal Rock Shelter, Namibie*. Supervision: Dr. D. Pleurdeau & Dr. L. Le Meillour.
Contribution: designed the study, supervised bibliographic research, lab work, edit and review thesis, help in thesis presentation.

Margot Guernalec (2018, MNHN, Paris). *Emploi de l'os dans la construction médiévale : chronologie et espèces employées dans le cas de Notre-Dame de Senlis, Oise (XII^{e} -XIX^{e} siècle)*. Supervision: S. Zirah, A. Zazzo, S. Cersoy.
Contribution: assistance in data analyses, review of the thesis before submission for evaluation.

Skills

Software

Mass spectrometry: Liquid chromatography Chromeleon; Bruker mass spectrometer DataAnalysis;
FT-IR: acquisition software OPUS (Bruker Daltonics)
Data treatment: Mascot, MaxQuant, PEAKS, Bionics, Mmass, Geneious
Statistics: R, Python
Radiocarbon calibration: OxCal online using more recent calibration curves

Laboratory skills

Proteins: extraction (decalcification, buffer preparation), concentration (VivaSpin), purification (SepPak columns), separation (SDS-PAGE), quantification (spectrophotometer), hydrolysis and mass spectrometry analyses (LC-MS/MS). Protocol development for optimisation.
DNA/RNA: extraction, purification and amplification (PCR settings).

Training

Mentorship program for Postdocs. Mentee in the program for a year (April 2024 – March 2025). Faculty of Health and Medical Science, University of Copenhagen, Denmark.
Zooarchaeology – Comparative anatomy. Training on modern and archaeological comparative anatomy over the two years of my MSCA. Zoological Museum, Copenhagen, Denmark. Trained by Dr. P. Bangsgaard and Dr. L. Yeomans.
Responsible conduct of research for Postdocs and Assistant Professors. 1 day workshop for Postdocs and Ass. Prof. University of Copenhagen, Denmark. March 2025.
CV and cover letter Workshop. 1 day course for PhD and Postdocs. University of Copenhagen, Denmark. September 2024.
Introduction to University Pedagogy. 1 week course for PhD and Postdocs. University of Copenhagen, Denmark. September 2024

Management experience

2024-ongoing

Responsible for communication between the Proteomic Research Infrastructure and the Welker group (Univ. Copenhagen). Preparation of request submission, training of the rest of the group, debugging with the platform when needed and other communication related to mass spectrometry sample analysis.

2016-2021

Help in building and managing the ancient protein activities at the MNHN.
Supervising related students in the lab.
Responsibilities including raising and managing research funds.

Other

June 2022 – January 2023

Co-organiser of the weekly palaeoproteomic groups meetings (with L. Viñas-Caron). Globe Institute, Copenhagen, Denmark.

2017

Participation to the annual public event "Fête de la Science" ("Science Fair") at the MNHN.
Bioarchaeology workshop of the Museum lab.
Discussion and explanation of our lab and field work to the public through fun animation "field square", "counting the 14C atoms", etc. Both children and adults.

2017-2019

Elected representative of the PhD students of laboratory AASPE (UMR MHNH/CNRS 7209). 2-years mandate.
Elected representative of PhD students at the 'Homme & Environnement' Department board of the MNHN. 2-years mandate.

Elected representative of the PhD students to the Ecole Doctorale 227 board (MNHN- Sorbonne Université). 1-year mandate. Elected in 2018 and 2019.