Engineer (research assistant) in confocal microscopy, experimental archaeology and neo-taphonomy

University of Bordeaux

Organisation: Université de Bordeaux
Research field: History » Prehistory
Researcher profile: Other Profession
Position: IE in confocal microscopy, experimental archaeology and neo-taphonomy
Country: France
City: Bordeaux
Application deadline: 15 May 2025 – 12:00 (Europe/Paris)
Type of contract: Temporary
Job status: Full-time
Hours per week: 37.5
Offer starting date: 1 September 2025
EU Funding: ERC StG – ExOsTech
Reference number: ERC_GA101161065_ExOsTech

The Unité Mixte de Recherche 5199 PACEA of the CNRS, Univ. Bordeaux, offers a 13-months research assistant contract (fr. ingénieur d'étude) for the European Research Council Starting project EXOSTECH "Revealing the functions of Pleistocene Expedient Osseous Technology with an innovative approach that integrates tribology with AI". The contract will ideally start on 1st September, 2025.

The UMR5199 PACEA

PACEA is a joint research unit attached to the CNRS, the University of Bordeaux and the Ministry of Culture. Its research focuses on the evolutionary, cultural and symbolic history of past populations in relation to environmental changes from the origin of the genus *Homo* to very recent periods. This very broad theme is based on a wide range of specialists including archaeologists, bio-archaeologists, funerary archaeologists, paleoanthropologists, paleontologists, prehistorians, archaeozoologists, paleogeneticians, geoarchaeologists and geologists.

The ERC StG ExOsTech project

Background
Over the past two decades, growing evidence indicates that the use by members of our lineage of unmodified or partially modified bone fragments preceded the emergence of fully shaped, standardized bone tools. But what were the major tipping points in their origin and development? And how did they contribute to the emergence of fully shaped, standardized bone tools? It is believed that these rudimentary tools, some of which date back to 2.4 million years ago (Myr), were used to dig, pierce, cut, or scrape. However, due to the lack of precise means to investigate these artifacts, it is difficult to reach definitive conclusions regarding their use. The development of replicable quantitative methods to infer their role in past cultural systems would allow a thorough documentation of their evolution in relation to other aspects of Pleistocene material culture. The objective of EXOSTECH is to fill this gap. The methodology is based on the development and application of innovative principles such as the integration of tribology with artificial intelligence to study use-wear patterns present on expedient osseous tools. This

methodological breakthrough relies on discriminant analysis of surface textural data (ISO 25178 and SSFA) acquired by confocal microscopy combined with image recognitions and multi-class neural network algorithms. We propose to apply this emerging method to study samples from Europe, South Africa, and East Asia dated between 1.8 Ma and 60 thousand years ago (ka). Cross-cultural comparisons of regional trajectories will help pinpoint (1) when expedient osseous tools became fully integrated in past cultural systems and (2) when standardized behaviours guiding their selection and use emerged in our lineage.

Highly interdisciplinary, this project involves senior researchers, post-docs, PhD students and research assistants as well as collaborations with five research institutions (Univ. Witwatersrand, Univ. Johannesburg, TraCEr Laboratory – MONREPOS, Institute of Vertebrate Paleontology and Paleoanthropology, Institute of Tibetan Plateau Research). The research assistant in Bordeaux will contribute to this endeavor by (1) providing support to the team members for their confocal surface acquisition and their post-acquisition treatment to ensure their high quality, and (2) implement sequential experiments involving the use of bone as tools and neo-taphonomic alterations.

Main tasks

1. Microscopic acquisition on faunal remains and post-acquisition treatment.
2. Implement functional and neo-taphonomic experiments.
3. Prepare figures and tables for scientific dissemination activities.

Requirements

The Applicant

The successful candidate will have a master in Prehistory, Archaeology, Paleoanthropology or Cultural evolution sciences. He/she will ideally have an expertise in the confocal microscopy and in the implementation of experimental approaches to study osseous remains. The candidate will be fluent in written and spoken French and preferably also in English. The candidate should demonstrate his/her willingness to work with team members.

Research field: History » Prehistory
Education level: Master or equivalent

Skills/Qualifications

Holder of a Master in the field of Prehistory, Archaeology, Anthropology or associated discipline, you have a good knowledge of microscopic imaging techniques and their application to record bone surface modifications.

- Experience in confocal microscopy.
- Interest in experimental archaeology and taphonomy.
- Capacity to implement experimental protocol and record the resulting data in a systematic way.
- Ability to work as a member of a team.

Specific requirements

You must comply with the working laws in France.

Additional information

Conditions

The candidate will work in Bordeaux under the supervision of Luc Doyon (UMR 5199 PACEA, University of Bordeaux). This position requires a commitment of 37.5 hours per week. Women and minorities are encouraged to apply.

Benefits
13-month fixed-term contract
Salary gross: 2,250€/month based on the University of Bordeaux salary grid (INM 416).
Job benefits include:

- 50 days of paid vacation from the first year (prorated to the hiring date)
- Remote working possible up to two days per week according to project needs and organization of the service
- Refund of 75% of the subscription to the public transport
- Participation in the private healthcare up to 15€/month
- Leisure, sport, and culture for all staff
- Disabled-friendly establishment
- Possibility of staff parking
- Sustainable mobility package for commuting to work

Selection process
Applications are reviewed as they are submitted. The shortlisted candidates will be contacted for an interview (early-June 2025). During the interview (videoconference), the candidates will present his/her relevant experience (with a PPT, max. 3 slides) and will answer questions asked by the panel.

Applicants should send a CV, a brief statement of qualifications and basis of interest in the position, and the email addresses of **2 appropriate references**.

Enquiries
Luc Doyon, Université Bordeaux, Allée Geoffroy Saint Hilaire, Bât. B2, CS50023, F-33615 Pessac CEDEX, France. E-mail: luc.doyon@u-bordeaux.fr

Only apply via the proper link or sending you files to : job-ref-32odah57b7@emploi.beetween.com