2-year renewable *Post-doctoral Fellowship* at Archaeology, Environmental Changes & Geo-Chemistry, the Vrije Universiteit Brussel, Belgium

Modelling the functional adaptations of the primate masticatory apparatus with focus on the internal bony structures.

This post-doctoral fellowship is part of ERC_101141770_PLIODIS (https://pliodis.github.io) and aims to reconstruct the dietary adaptations of early Plio-Pleistocene hominins from southern Africa.

Traditionally, dietary reconstructions are based on analyses of morphology within a comparative framework, isotope analyses and, more recently, finite element modelling. In this project we will focus on the internal stress flow within skeletal remains and assess the kinematics of the masticatory apparatus. The task of the PDRA is to set up a multibody dynamic model of mastication that is capable of inputting detailed information about the internal bone structure(s); as regards the latter, the fellow will work closely with the PDRA employed at the Evolutionary Studies Institute at the University of the Witwatersrand.

The project is a proof of concept, whereby some model(s) of extant primates will first be created before attempts will be made to reconstruct/model the mastication of extinct hominins.

The fellowship is based at AMGC at the Vrije Universiteit Brussel, under the directorship of Prof. Gabriele Macho.

The work involves:
- Creating a multibody dynamic model of mastication using CT data of extant primates. Such analyses are not currently conducted at VUB and the PDRA therefore has the opportunity to set up his/her own system and create a novel research protocol
- produce sensitivities studies, i.e. testing the importance of various internal morphological features for the performance of the model
- Given the incomplete nature of fossil remains, the PDRA will experiment/test to what extent s/he can reduce the complexity of the model before sacrificing too much information.

The candidate is expected:
- to have a PhD or equivalent in biological/natural sciences, anatomy, palaeontology or related subject
- prior experience with CT scanning and biomechanical modelling
- coding skills
- good communication skills
- meet deadlines

To be considered for the position submit your full cv, names and addresses of two potential referees and a short motivation statement. For further information contact Gabriele.Macho@vub.be.

Applications will be accepted until the position has been filled.

May 2026