# ABSTRACT SUBMISSION

# Possible application of machine learning-based model for evaluating mobility in prehistoric Arabia

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## Abstract

Accurate estimation of bioavailable strontium (Sr) ranges is essential for understanding the mobility and localness of past human populations. This estimation becomes particularly difficult when traditional sampling methods are unavailable or when working in regions with very narrow ranges of bioavailable Sr values. Such limitations can hinder the identification of non-local individuals in archaeological datasets, potentially obscuring valuable insights into population movements and interactions. One of these regions, where strontium range is not variable enough, is Arabian Peninsula. To address these challenges, I present MobSr, a machine learning-based model developed to estimate probable bioavailable strontium ranges. Unlike conventional methods, MobS operates solely with human strontium isotope data, removing the need for additional environmental sampling. This tool enhances the analysis of mobility and residential patterns by adding a new dimension to the Sr estimation process. MobSr is designed to help researchers better understand complex population dynamics, even in regions where sampling is limited or challenging.

## Keywords

Mobility, Machine Learning, Stable Isotopes, Modeling, Prehistory

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