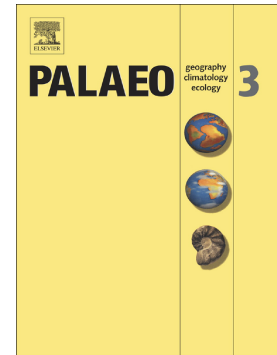


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# Diagenesis of archaeological bone and tooth

Christopher Kendall<sup>a,b</sup>, Anne Marie Høier Eriksen<sup>b,c</sup>, Ioannis Kontopoulos<sup>d</sup>, Matthew J. Collins<sup>b,d</sup> and Gordon Turner-Walker<sup>e</sup>

<sup>a</sup> University of Toronto, Department of Anthropology, 27 King's College Circle, Toronto, Ontario. chris.kendall@mail.utoronto.ca

<sup>b</sup> University of Copenhagen, Centre for GeoGenetics, Evolutionary Genomics, Oester Voldgade 5-7, Copenhagen, Denmark.

<sup>c</sup> National Museum of Denmark, Conservation & Natural Sciences, I.C. Modewegsvej, Brede, Kgs. Lyngby, Denmark. anne.marie.eriksen@natmus.dk

<sup>d</sup> University of York, BioArCh, Environment Building, Wentworth Way, York, UK. ik620@york.ac.uk, matthew.collins@york.ac.uk

<sup>e</sup> National Yunlin University of Science & Technology, Department and Graduate School of Cultural Heritage Conservation, 123 University Road, Sector 3, Douliu, Yunlin County, Taiwan. gordontw@yuntech.edu.tw

## Abstract

An understanding of the structural complexity of mineralised tissues is fundamental for exploration into the field of diagenesis. Here we review aspects of current and past research on bone and tooth diagenesis using the most comprehensive collection of literature on diagenesis to date. Environmental factors such as soil pH, soil hydrology and ambient temperature, which influence the preservation of skeletal tissues are assessed, while the different diagenetic pathways such as microbial degradation, loss of organics, mineral changes, and DNA degradation are surveyed. Fluctuating water levels in and around the bone are the most harmful for preservation and lead to rapid skeletal destruction. Diagenetic mechanisms are found to work in conjunction with each other, altering the biogenic composition of skeletal material. This illustrates that researchers must examine multiple diagenetic pathways to fully understand the post-mortem interactions of archaeological skeletal material and the burial environment.

Keywords: Bone diagenesis, environment, bioerosion, collagen, hydroxyapatite, ancient DNA

## 1. Introduction

The survival of biomolecules in archaeological and fossil bone has attracted the attention of a great number of researchers over the past few decades. The post-mortem preservation of bone, however, depends upon a number of complex processes. Thus, some bones survive well, whilst others degrade rapidly. Here we attempt to survey the major ways in which skeletal tissues, specifically those made of mineralised collagen (bone and dentine), become transformed following deposition in the archaeological or geological record, a process known as diagenesis.

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