EXTRACTION OF ANCIENT DNA FROM 800 YEAR OLD BISON BONE

A. L. Gylfe and A. M. Kiesow*
Northern State University
Department of Biology
Aberdeen SD 57401
*Corresponding author: amkiesow@northern.edu

ABSTRACT

There are numerous methods of extracting DNA from bone, e.g., phenol-chloroform extractions, but such methods have varying levels of success and complexity. The purpose of our research was to find the simplest method to extract ancient DNA. Different methods were used in an attempt to extract DNA from an 800 year old bison bone collected from an archeological dig in northeastern South Dakota. Eight extraction methods were conducted, ranging from adapted phenol-chloroform methods to extraction kits. After each extraction, verification and quantification of the DNA were analyzed using gel electrophoresis. A standard phenol-chloroform DNA extraction protocol is the best method for extraction of ancient bison DNA. Knowing that ancient DNA can be extracted with a certain amount of accuracy permits archaeologists and biologists to align efforts with regard to dig sites and bone collections. Implications could lead to the elucidation of past species and subspecies as well as evolutionary history.