



## Physical Anthropology Section – 2006

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### **H82 Is This Bone Human or What? In Pursuit of Human vs. Non Human Determinations in Small Osseous Fragments**

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After attending this presentation, attendees will learn the advantages and disadvantages of applying osteological, histological, and immunological and DNA based analyses to determining human versus non-human from small and degraded osseous fragments.

Protein radio-immunoassay, osteohistology, and cytochrome-B testing have been around for years but have not been applied much to forensic casework. This study examines and compares the techniques on a series of known samples, closely simulating actual casework with tiny and degraded osseous fragments. This presentation will impact the forensic community and/or humanity by providing scientists a better place to make good choices in their own casework in this area after examining the lessons learned in these trials.

Forensic anthropologists are sometimes faced with osseous fragments obtained from a recovery scene that are either too small or too degraded to make a definite determination of human versus non-human origin on the basis of traditional comparative osteological methods. Determining what is and is not human can assist in defining the scope of further investigation in the field. In the event that only morphologically uninformative bone fragments are recovered from a particular location, species determination (or minimally human/non human determination) for such items could be a critical evidentiary finding. A number of technologies for approaching this problem have been available for some time. This study reports preliminary comparative results for a set of test samples. Each test sample was derived from known human or faunal remains obtained from a variety of highly challenging recovery environments. The relative merits of four techniques are compared: traditional comparative osteology, histological osteology from thin section, protein radio-immunoassay (pRIA), and sequencing of species-specific mitochondrial DNA (cytochrome-B). The advantages and limitations of these methods will be evaluated in the context of the test sample set.

**Histology, Immunology, DNA, Osteology**