



## Physical Anthropology Section – 2008

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### **H97 Sternal Rib Histomorphometry: A Test of the Age Estimation Method of Stout, et al. (1994)**

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After attending this presentation, attendees will understand the application of histological age estimation method for the sternal rib, and become aware of the effects of biological ancestry, and diagenesis on its accuracy.

This presentation will impact the forensic community by providing valuable information regarding the application and limitations of the sternal rib method for histological age at death estimation.

Stout et al. (1994) offer an age estimation method that employs cortical bone histomorphometry of the sternal end of the rib. The published age predicting formulas are derived from the original sample of fourth ribs of European ancestry used by Iscan et al. (1984, 1985) to develop their sternal rib phase method for age estimation. The purpose of this paper is to report the results of the application of this method to estimate age at death for an independent sample of ribs derived from a 20th Century, Midwestern, African American cemetery. Comparison of estimated ages and reported ages at death found that the Stout et al. (1994) sternal rib age predicting formula was not accurate when applied to this independent sample. Mean differences between reported and estimated ages at death among several observers ranged between -2.5 to -17.7 years, with standard errors of 6.2 and 9.9 respectively. Several factors may account for these results. First, Cho et al (2002, 2006) have reported population differences in bone remodeling rates for the mid-shaft rib. The resulting disparity between predicted and reported ages at death, therefore, may be due to population differences in age associated bone remodeling rates that are reflected in sternal rib histomorphometrics. Observed differences between reported and estimated ages, however, did not exhibit a clear pattern. The added effects of various degrees of diagenesis on sampling and the performance of histological age estimation are also discussed.

**Sternal Rib, Histomorphometry, Age**