



W21 Macromorphoscopic (MMS) Traits: Data Collection and Analysis

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After attending this presentation, attendees will: (1) understand the history and theoretical concepts of ancestry estimation via cranial morphology, particularly in reference to MMS traits; (2) have gained experience scoring macromorphoscopic traits in human crania using recently developed software; (3) have learned the basic strategies of various statistical procedures to estimate ancestry with MMS trait scores; and, (4) have acquired working knowledge of the application of MMS trait data in casework.

This presentation will impact the forensic science community by providing up-to-date methodologies and theoretical considerations in ancestry estimation using MMS trait data. Additionally, attendees will learn how to record, analyze, and report MMS trait data using the appropriate statistical framework. Attendees will be introduced to a worldwide reference dataset that permits ancestry estimations beyond the historical three-group classifications used in ancestry estimation from cranial morphology.

This presentation will focus on MMS trait data collection and analysis, particularly as these slight variations in cranial form relate to the estimation of ancestry from human skeletal remains. The once-subjective nature of MMS data has shifted to more objective methods through the introduction of standard data collection protocols; however, observer experience, expertise, and training still impact data collection. To that end, attendees will gain a deeper understanding of MMS trait analysis by understanding where and how biases can be introduced.

Following a general introduction, a series of lectures provided by scholars in MMS trait analysis will outline MMS trait manifestations, trait distributions, and illuminate aspects of ancestry estimations from different viewpoints and through multiple forms of analysis. Previously, approaches to ancestry estimation using MMS traits did not detail the various manifestations, or character states, of each trait. Instead, these approaches relied on extreme expressions and trait lists. In other words, analysts needed an expert-level surety of human variation. Attendees will be guided through the complete analytical process performed in forensic casework. Using a variety of examples and hands-on material, attendees will learn to assess MMS trait data using standardized data collection protocols. In concurrence with this training, attendees will become familiar with newly developed data collection software freely available to practitioners. Statistical procedures will be reviewed, both theoretically and practically, which have been deemed most appropriate for MMS trait data analysis. Attendees will then learn to effectively report ancestry classifications using a worldwide reference sample using observed trait scores and statistical analyses.

Lecturers will conclude the session by demonstrating the ways in which MMS data have been applied in current research. This will include geographic patterning of MMS traits, observer error, and potential secular change inherent in MMS data. Becoming familiar with and understanding these nuances allows practitioners to make more meaningful interpretations of ancestry classifications using MMS data.

Estimating ancestry from the skull need not be difficult. In much the same way students first learn metric analysis (e.g., “GOL is measured between these two landmarks and entered into a computer program to obtain an estimate”), macromorphoscopic trait analysis requires visual learning and a hands-on approach. The goal of this session is to increase the utilization of an empirical method to ancestry estimation via cranial morphological traits in the forensic sciences by training a subset of the community to correctly perform the method. In turn, this information can then be disseminated to colleagues and students.

Ancestry, Macromorphoscopic Traits, Human Variation