W22 The Use of Dental Morphology in Forensic Anthropology

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Learning Overview: After attending this presentation, attendees will be able to identify various morphological traits of the dentition that are relevant to studies of human variation and forensic anthropology. Attendees will also be able to apply this knowledge to the estimation of ancestry using a newly developed web-based application. Additionally, attendees will be introduced to a new database designed for the collection of dental data.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing attendees with applied experience in the recordation of dental morphological variation and the application of these data in a statistical framework in which to estimate ancestry.

Dental morphology has been broadly used in biological anthropology to study human variation and explore research questions centered on migration, social structure, and macro- and micro-evolution. Despite this research, these data have not traditionally been used within forensic anthropology outside of the trait-list approach. However, recent research has shown that dental morphological data have much to offer the field of forensic anthropology.

This workshop will center on the use of dental morphological data and how it can be used as part of the biological profile. There are now methods to employ these data to estimate ancestry within a robust statistical framework utilizing a worldwide reference sample. As these traits have not been widely used in the discipline, training in the identification of dental morphological variants is lacking, and analysts have been hesitant to incorporate these data into their analyses. While observer error is certainly an issue in employing these traits, with proper training, dental morphological data can easily be included into forensic anthropological casework and research.

Presentations will begin with an explanation of the systems used to record dental variation and will outline the main traits used in describing human variation. Proper tooth identification will also be briefly addressed. Analytical methods will then be discussed to include the correct application of these data and statistical analyses. Attendees will be introduced to a custom database designed to record these data as well as to a statistical application to estimate ancestry. Following these presentations, attendees will be provided the opportunity to apply this knowledge in the analysis of skeletal material and casts. Participants will be guided through the process of dental trait scoring using the custom database presented, as well as using the web-based application to estimate ancestry.

Dental morphology represents another aspect of the phenotype, and therefore the genotype, that can aid in the identification of an unknown individual. Understanding the application of these data provides forensic anthropologists with one more method to employ in skeletal analysis, which may be particularly important in difficult or fragmentary cases.

Ancestry Estimation, rASUDAS, Dental Non-Metrics