



Physical Anthropology Section – 2008

H55 Ancestry Informative Markers (AIMs) and Forensic Anthropologist's New Competition: Understanding the Theories, Methods, and Techniques for Allocating Ancestry in the Field of Forensic Genetics

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The goal of this presentation is to better understand the present technological ability of geneticists to determine population affinity of individual humans. A brief history of the field of genetic contributions to understanding human phenotypic and genotypic variation and its role within forensics will be discussed. In addition, the presentation will review the current standing of this new genetic competition for determining ancestry, while considering the differences and similarities of the anthropological and genetic methods and theories for making this determination. The presentation will also examine the future roles for both fields in determining population affinity of human remains while discussing the capabilities and limitations unique to each.

This presentation will impact the forensic science community by making attendees aware of the advances in the field of genetics that show potential for the ability to assess ancestry. Understanding the future roles for both anthropologists and geneticists in determining population affinity of human remains and the capabilities and limitations unique to each will aid in our understanding of one of the most complex questions in our field: ancestry, race, and morphological variation.

The goal of this presentation is to update the forensic anthropological community on the advances in the field of genetics that show potential for the ability to assess ancestry. After this informative presentation, the audience will better understand the present technological ability of geneticists to determine population affinity of individual humans. A brief history of the field of genetic contributions to understanding human phenotypic and genotypic variation and its role within forensics will be discussed. In addition, the presentation will review the current standing of this new genetic-based technique for determining ancestry, while considering the differences and similarities of the anthropological and genetic methods and theories for making this determination. The presentation will also examine the future roles for both fields in determining population affinity of human remains while discussing the capabilities and limitations unique to each.

This new genetic technology called ancestry informative markers, or AIMs, and other types of population sorting genetics were originally developed for understanding population-based diseases or the prevalence of certain diseases in specific populations. Along with this research that utilized portions of the genetics sequence of populations, it became possible to look for genetic characteristics that were unique to each sampled population. With the discovery of these unique AIMs, the questions of race, region, and ethnicity have made their way into genetic studies. Sampling techniques, population boundaries, and preconceived ideas about race all play a major role in the interpretation of the genetic data. Additionally, the ethical treatment of data and public access to the data are presently disputed topics. Current discussions in the field of population genetics focus on these issues and how to approach these topics with an air of objectiveness—something that forensic anthropologists have sought to attain for decades.

Though geneticists are far from reaching a conclusion, these dialogues often parallel those within forensic and physical anthropology surrounding race and morphological population variation. With the onset of a different field of expertise attempting to allocate and understand ancestry in the forensic context, it is the responsibility of the forensic anthropologist to understand how these assessments are made and how we can collaborate with the field of forensic genetics to initiate a more accurate understanding and ability of the allocation of ancestry.

References:

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Ancestry, Genetics, Race