



# Criminalistics Section - 2015

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## **B101 Contributions of Physical Evidence in Human Identifications**

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The goal of this presentation will be to focus on the uses of trace evidence, specifically hairs, fibers, and fabric damage, which can aid in the identification of an individual. After attending this presentation, attendees will have a better understanding of the types of evidence criminalists examine and the potential for collaboration between forensic microscopists, forensic biologists, and forensic anthropologists.

This presentation will impact the forensic science community by showing how trace evidence can provide significant contributions in human identification analyses through the examination of physical evidence and collaboration with other specialists.

Microscopical analysis of hairs can provide information on ancestry, cosmetic treatments, and aid in identification through comparison with a known hair sample to potentially include an individual as the possible source of a hair sample. In addition to comparing hairs to a known sample and being a source of mitochondrial DNA, identification of dyes or other artificial treatments found in hair samples can corroborate information about a victim. A microscopic analysis of hair morphology and pigmentation patterns can provide information on ancestry and corroborate skeletal analysis of mixed ancestry. Artifacts of decomposition on hairs, either through postmortem root banding or fungal tunneling along the hair shaft, can provide information which, along with accumulated degree day calculations, may provide probative evidence in a criminal case.

Fibers are another source of physical evidence that can provide significant links in human identification cases. Samples of alternate knowns of the clothing worn by a victim have been used as evidence to prove contact with a suspect or scene when a body has not yet been recovered. Analysis of fabric condition and style may provide information about an individual's size, age, possible ethnicity or group affiliation, and trauma. Fabric damage in conjunction with an anthropological analysis of skeletal remains have been able to indicate a type of weapon, its general dimensions, and the number of injuries in an area covered by clothing. The degree of degradation for clothing depends on the type of fiber(s) that a garment is composed of, the fabric construction, and the environment from which the clothing is recovered.

Including a forensic examiner qualified in hair and fiber examinations to human identification investigations can contribute an area of expertise that can greatly assist in providing information on ancestry, decomposition, trauma analysis, and corroboration of victim identity.

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**Criminalistics, Trace Evidence, Anthropology**