



Pathology Biology Section – 2011

G8 The Bone Collector: When Reality Overcomes Fantasy

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After attending this presentation, attendees will understand the importance of the application of a multidisciplinary approach in challenging cases of identification of human remains.

This presentation will impact the forensic science community by demonstrating that a case that may apparently seem simple may instead reveal great methodological and interpretative challenges, making it imperative to use a multidisciplinary approach with methods that require specific professional expertise in various specialties (e.g., pathology, genetics, anthropology, physics, chemistry).

All who work in the forensic field know that the more crucial the biological samples to be analyzed are (charred remains in an advanced state of decomposition, fragments of tissues, bones, etc.), the more complex personal identification is. In these challenging cases it is extremely important to apply a multidisciplinary approach for identification.

A case that came under their observation in July 2007 in Rome will be presented. A skeleton was discovered by firefighters after extinguishing a fire in a grassy field. The skeleton was almost complete and its right side was charred because of the flames. Beside the skeleton, a bag containing a bunch of keys and an identity card was found, fortunately not destroyed by the fire. These items belonged to an elderly man who disappeared in that area four years before.

Genetic tests were performed on a left femoral bone sample in order to confirm the presumed identity of the skeleton and instead provided a genetic profile that was not compatible with the sons of the missing man. Thus, other samples were taken from different bones and examined resulting in five different genetic profiles, corresponding to three women and two men, and none of them was compatible with the sons of the missing man.

Therefore the prosecutor asked for an anthropological expertise, who confirmed morphologically that the skeleton was composed by bones belonging to different individuals and could also give a range for the approximate age of these individuals at the time of death.

Thus, the prosecutor asked for the time-of-death estimation of these individuals and, at this request, specific investigations on the bone remains were carried out based on the measure of the isotopic ratio of ^{14}C in lipids and collagen by Accelerator Mass Spectrometry (AMS), which can provide a dating for the remains in exam.

So far, five DNA profiles have been identified but not all the bones available have been genetically examined yet, so it is possible that the genetic profiles, and therefore the number of individuals involved in the case, may be more.

Identification, Multidisciplinary, Approach