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### **E45 The Relevance of a Multidisciplinary Approach to the Crime Scene Investigation: A Case Report of a Homicide Victim Who Was Hidden**

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The goal of this presentation is to emphasize the validity of evidence from crime scene investigations through the cooperation of the forensic pathologist, the cadaver dog team (dogs trained to locate human cadaveric blood in very low concentrations and cadaver water search dogs that detect submerged human bodies), and the use of forensic field tests which allow the detection of latent human traces, providing key evidence to solve complex crime cases.

This presentation will impact the forensic science community by showing how proper crime scene processing and collection of evidence provide the preliminary basis for any subsequent forensic investigations, testing, and analysis.

This case report concerns the involvement of a forensic team in police investigations of a woman who had already been missing for four months. The 38-year-old foreign national lived in an isolated country house. The police extensively searched an approximately 50-mile area surrounding the woman's house.

The forensic team consisted of the forensic pathologist and the canine unit (a 7-year-old male Labrador retriever) trained for the detection of latent traces of cadaveric blood. In addition, the use of a water search dog (a 3-year-old male Labrador retriever) enabled the team to extend the search into a lake. Starting from the home of the missing woman, the track followed by the dogs led and stopped at a covered well, 20 miles away from the woman's house, in an uninhabited area. On the ground surrounding the well, latent traces of blood were detected by the dogs. The latent traces were confirmed by the luminescence of the crime light, noticeable by daylight, and a prompt test with a latent bloodstain luminal reagent was performed. The advantage of this reagent consists of the ability of the heme to catalyze the chemo-luminescence property of luminol; it will emit light, which can be noticed in the dark. Additionally, the proof that the latent traces contained human hemoglobin was delivered by an immunochromatographic rapid test, which is based on the reaction with monoclonal anti-human Hb antibodies.

Inside the well, a corpse was discovered floating in the water. The external examination and a complete autopsy revealed a decomposing body of a woman murdered by multiple rifle shots to the neck and abdomen. The subsequent DNA analysis showed that the woman was the same person that had gone missing four months earlier and that the traces of human blood detected during the investigation belonged to the same woman. The forensic team was then asked to survey the country house and the van owned by a farmer who was stopped by a police officer in connection with the murder of the woman. Using the same method described above, it was possible to identify other latent traces of human blood, which later DNA testing proved to be that of the murdered woman. With this proof, the police obtained the confession of the woman's murder by the farmer.

Events leave physical traces which constitute a physical evidence record of the event.

This case report demonstrates how an interdisciplinary approach provided investigators with the tools necessary to succeed in solving the case, even when starting from meager elements of investigation. A proper crime scene processing and collection of evidence, an appropriate use of a field test, the incorporation of a well-trained cadaver dog and water search dog allowed investigators to suitably evaluate what happened, recognize the subject of the investigation, and ultimately secure a confession and subsequent conviction of the perpetrator. The data derived from a successful crime scene investigation provide the preliminary basis for any subsequent forensic investigations, testing, and analysis.

Essentially, the proper crime scene investigation establishes the evidence, both criminal and scientific, on which the entire investigation framework is based.

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#### **Crime Scene Investigation, Field Test, Cadaver Dog**