



### F24 Bite Mark Profiling Based Upon Color, UV, and ALI Photographic Interpretation

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After attending this presentation, attendees will have a better understanding of the limitations in predicting a biter's profile based upon color, UV, and ALI bite mark photographs

This presentation will impact the forensic science community by analyzing bite marks through various photographic means, providing new knowledge in the already extensive list of factors affecting bite mark analysis.

It is known that bite marks are influenced by many factors such as the nature of skin, Langer's lines, underlying tissue, location of the injury, presence/absence of clothing, victim and/or perpetrator movement as well as conditions under which a body is found and/or preserved<sup>1</sup>.

In an upcoming publication<sup>2</sup>, the authors' analyzed postmortem bite marks while the current research deals with antemortem bite marks.

Twenty-five scaled (ABFO No.2) color bite mark photographs of varying evidentiary value (Minimal; Poor; Excellent) and of known perpetrator origin (gold standard) were given to two individuals with bite mark experience. The examiners were asked to classify the evidentiary value and to identify if any of the bite marks were created by the same person or if a number of persons were involved and how many. They were not given dental models of the bite mark perpetrator(s). The bite marks were inflicted on many areas of a piglet's body including the abdomen, thigh, hip, leg, back, shoulder, chest, and neck. The examiners were told where the bite marks had been inflicted but were not given an overview photograph other than the scaled photograph.

Following this exercise, the examiners were given UV photographs of the same bite marks and were asked to perform the same exercise without comparing previous color photographs or results.

Lastly, examiners were given ALI photographs of the same bite marks with the same previous conditions.

In summary, this presentation will inform attendees of limitations in predicting a biter's profile based upon color, UV and ALI bite mark photographs. As stated in an earlier study<sup>3</sup>, every occasion in which a dentition comes in contact with skin can be considered a unique event. This author urges caution in definitive dental profiling based upon bite mark photographs.

#### References:

- <sup>1</sup> Dorion RBJ, editor. Bite mark evidence. New York: Marcel Dekker (CRC Press), 2005.
- <sup>2</sup> Bush MA, Cooper HI, Dorion RBJ, A Review of the scientific basis for bite mark profiling and arbitrary distortion compensation. Journal of Forensic Sciences, 2010 (in publication).
- <sup>3</sup> Bush MA, Miller RG, Bush PJ, Dorion RBJ. Biomechanical factors in human dermal bite marks in a cadaver model. Journal of Forensic Sciences 2009;54(1):167-76.

#### Bite Mark, Documentation, Photographic Interpretation