A160 Capturing the Moment: Photographing Low Level Signals From Serological Testing of Swabs and Cartridges

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After attending this presentation, attendees will have learned how to photograph, in a single image, multiple DNA swabs, or cartridge tests with varying levels of signal intensity from presumptive color tests or from cartridge tests for blood or semen.

This presentation will impact the forensic science community by providing an optimal way to photograph the results of time-sensitive Serological tests of varying signal intensities in order to document the findings of a Forensic Genetics analyst.

To photograph the results of presumptive color tests on swabs or the results of blood or semen cartridge tests, the photographs must be taken at specific time interval after the test is completed. The photograph must accurately capture what the analyst observes even when the results are faint. The Forensic Imaging Division and the Forensic Genetics Laboratory of the Harris County Institute of Forensic Sciences conducted a study to establish photographic standards and procedures that would accurately capture and corroborate the results observed by the analyst within the time constraints. This interdisciplinary effort was designed to identify and validate a photographic method so that the images could be used for verification of the analyst's work. These results are intended to provide guidance to other agencies in establishing and validating photographic methods in order that photographs may become a standard and useful part of the case record.

A Nikon D5000 camera with a Nikkor 85mm macro lens was used to perform the tests with an ISO of 200, a shutter speed of 1/125th of a second and an aperture setting of *f*/22. Due to the fact that several swabs or cartridges are often collected at the same time, these settings had to be able to accurately portray all levels of signal intensity in a single shot. For the swabs, a series of tests on various colored backgrounds, exposure settings, and lighting angles was conducted. Settings were validated by changing one variable at a time and holding the others variables constant. Successful results were observed at -0.3 exposure compensation on an 18% neutral gray background with direct lighting. This proved to yield an image that captured a wide range of signal levels on several different swabs within a single image.

For the cartridges, another series of images was photographed using more extensive exposure compensation settings and lighting angles. Since the cartridges completely fill the frame, there was no need to experiment with different colored backgrounds; however, due to the reflective nature of the cartridge material, additional exposure compensation settings were needed. These images were photographed by changing only one variable at a time in order identify the best settings for the test. The most favorable results were achieved at an exposure compensation setting of -1.7 with direct lighting.

Presumptive color tests of Serological swabs as well as blood and semen testing on cartridges are integral parts of the Forensic Genetics Laboratory. It is the opinion that all results of visual tests should be photographically documented for verification. Photographs of faint results can be challenging, but a photograph taken under the right conditions can provide a permanent and accurate record of the test results. The tests done in this study will allow for time-sensitive test results to be successfully photographed and verified and will provide guidance for others to achieve the same results.

Photography, Presumptive Tests, Serology

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