

STR Analysis by Capillary Electrophoresis: Technical Issues and Considerations

James P. Ross, BS, Demris A. Lee, MSFS, Mitchell M. Holland, Ph.D.
Armed Forces Institute of Pathology, 1413 Research Boulevard, Rockville, MD 20850



Short tandem repeat (STR) analysis is a very powerful forensic investigation tool. Over the past couple of years techniques have evolved to allow for the analysis of several STR loci per amplification reaction. Today, several commercial fluorescent STR multiplexes and detection platforms are available to the forensic scientist that allow for “identity” testing in a single lane of a slab gel or single injection on a capillary electrophoresis instrument. Many forensic laboratories are moving away from traditional slab gel based detection systems and are moving towards capillary electrophoresis. Whereas gel electrophoresis has been routinely used in all fields of molecular biology for many years, capillary electrophoresis has not. However, capillary electrophoresis utilizes the same basic electrophoretic principles employed by traditional slab gel electrophoresis. Also, many of the same issues and concerns

associated with gel electrophoresis still apply to capillary electrophoresis but with any new and different technology there are always new issues which need to be addressed before implementation into casework.

The PowerPlex™ 1.2 Fluorescent STR multiplex was evaluated on the ABI Prism™ 310 Genetic Analyzer using whole blood mixtures, non-probative case specimens and standard forensic specimens such as blood-stains, hair, saliva, and semen. Technical issues concerning capillary electrophoresis and analysis of STR profiles on the ABI Prism™ 310 Genetic Analyzer will be presented.

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