

## VALIDATION OF THE ABI PRISM® 3100 GENETIC ANALYZER CAPILLARY ELECTROPHORESIS SYSTEM FOR IMPLEMENTATION IN FORENSIC CASEWORK

**Monica Sloan, Loretta D'Costa, Suzanne Lima, Al Marignani, Roger Frappier, Jonathan Newman**  
*Biology Section, Centre of Forensic Sciences, Toronto, ON*



This poster will describe the validation of the ABI PRISM® 3100 Genetic Analyzer employed for the sizing of fragments generated from PCR amplification using STR multiplex kits. In addition the poster will outline the deployment of this instrument as a platform for the high throughput analysis of forensic casework samples and samples collected in a mass disaster scenario.

The ABI PRISM® 3100 Genetic Analyzer is a 16 capillary electrophoresis system designed for use in mid to high-throughput laboratories. In the 96 well plate format for injection, the instrument has the capability of analyzing 192 samples without user intervention combined with a run time of 45 minutes, this equates to a potential of over 400 samples analysed over a 24 hour period. The Centre of Forensic Sciences (CFS) forms a part of the emergency response program for the Province of Ontario and as such the laboratory has been tasked with the creation of additional capacity for DNA identification of the victims of a mass disaster. The strategy employed, to be able to respond to this demand and the ever-increasing number of forensic cases being submitted to the laboratory, is to incorporate the latest automated technologies so as to be able to rapidly expand testing capacity when the need arises. The ABI 3100 forms one of the components in an automated forensic DNA testing process.

The validation of this instrument followed SWGDAM guidelines and data were generated from samples amplified using ABI Profiler Plus® and COfiler® STR multiplex kits. These kits have been previously validated in our laboratory using the ABI PRISM® 377 DNA Sequencer as a fragment analysis platform. The validation of the ABI 3100 platform encompassed precision, sizing, sensitivity and optimization of instrument parameters including injection times, the results of which will be presented in this poster.

In order to make use of this instrument on a daily basis, it will be deployed in the laboratory for forensic casework initially as a complement to the ABI 377 and potentially as replacement in the future. The ABI 3100 proposed casework deployment is for the analysis of comparison samples from victims and suspects, samples from break and enter cases and bloodstains from crime scenes where bloodstain pattern analysis is being conducted. In addition the instrument could facilitate a rapid expansion of our DNA testing capability in the event of a mass disaster.