IMPROVED COPAN CPA200™ (CARD PROCESSING AUTOMATION 200) A SEMI-AUTOMATIC PUNCH SYSTEM FOR PROCESSING SAMPLE CARD FOR HUMAN DNA PROFILING DATA BANKING REGISTRY

Gabriele Savoldi[1], Dario Manfredi[1], Cristian Scaratti[1], Camilla Panni[1], Davide Dabellani[1], Giuseppe Corbelli[1], Giorgio Triva[2], Santina Castriciano[2]

[1]Copan NewLab Spa, Brescia Italy. [2]Copan Italia Spa, Brescia Italy

Introduction: In recent years forensic laboratory workload has increased exponentially and laboratory staff is over helmed with the large number of sample cards that have to process for DNA profiling, both criminal or normal population data banking registry. Copan developed first the NUCLEIC-CARD™ for buccal or blood sample storage for DNA profiling, and Copan NewLab developed the CPA200™ (Card Processing Automation), a semi-automatic punch system for processing buccal and blood sample card for human DNA profiling. The CPA200™ punches a disk of the NUCLEIC-CARD™ containing the samples and places it into the well, assigned by the worksheet, of an Optical 96-Well Reaction plate. A computer, integrated with the CPA200™, allows the operator to create a worksheet, assigning each sample ID to each well of the plate, selecting the punching position on the card, implementing the cleaning procedure and more additional features. The CPA200™ workflow and protocols, previously validated in Copan, now after a year being on the market, and receiving user's feedback, the CPA200™ has been improved to facilitate customer's suggestions.

Objectives: The objectives of this study were to validate the improved CPA200™ after implementing the customer's suggestions.

Methods: The following improvements have been made and validated:
Optimizing the instrument integration; specific communication protocols were installed and validated in order to guarantee an optimal integration between the instrument and a LIMS
Card random accessing; in the protocols imported by LIMS, it's no longer necessary to sort the cards observing the order defined by the protocol. First the card barcode is scanned, and then the relevant well is aligned under the puncher.

New card barcode reader – An improved barcode reader for card identification was implemented. Compatibility with 2D codes and all codes used in forensic laboratories (code 128, code 39, code 93, interleaved 2of5, text and more).

Skipping the card barcode – the possibility option to skip the card barcode reading step during a run was implemented in order to process cards without a barcode or ID.

Improving the speed; the performance was improved with a new software installation. It takes now 25 minutes to complete a full 96-wells plate with both camera check and cleaning procedure, 16 minutes without cleaning procedure.

Results and conclusions: All the improvements as suggested by the customers were implemented and validated internally by Copan and by independent users. The improved CPA200 facilitate the forensic laboratories workflow, reduces time to process buccal or blood samples on Copan NUCLEIC-CARD™