

## **ALTERNATIVE PAPER MATRIX FOR THE COLLECTION, TRANSPORT, ARCHIVING, AND PROCESSING OF BIOLOGICAL SAMPLES**

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Buccal swabs in the human identification field are a preferred and accepted method for the collection of biological samples for genetic testing involving paternity, forensics, and the CODIS program. The American Association of Blood Banks reports that in 2008 over 98% of the samples collected for casework have been buccal swabs. Many studies have demonstrated the use of Whatman's FTA<sup>®</sup> Paper matrix with whole blood and buccal cells in downstream applications for genetic testing. Fitzco, Inc has developed an alpha version of a biological Collection System (Project Ensemble) that is based upon their 705 paper matrix & the Fitzco Collection Card format. Until now, an alternative paper matrix has not been available for laboratories to utilize throughout their various stages of processing, collection through sample processing. Several versions are currently undergoing alpha testing which include an untreated matrix, a treated matrix and a pH indicating-treated matrix. Ensemble Collection System has been designed to facilitate its implementation into existing laboratory systems where FTA<sup>®</sup> Paper is routinely used. Previous studies have successfully demonstrated that buccal epithelial cells can be directly transferred onto FTA<sup>®</sup> Paper by pressing or rolling the swabs onto the paper either manually or with a disposable pressing device. Consequently, the round foam tipped lollipop swab has been selected for the efficient transfer of buccal epithelial cells within a target circle of the Ensemble Collection System. A large collection and transfer area is created when the saliva, carrying the buccal epithelial cells, is released from the swab applicator and absorbed by the 705 matrix. Three processing methods have been evaluated by PCR amplification to determine the utility of the 705 matrix: 1.2 mm punch processing, section cuttings, and DNA IQ extraction. All three processing methods have provided full DNA profiles using commercially available genetic amplification kits. In addition, the successful DNA extraction with DNA IQ demonstrates the usefulness in robotic systems to facilitate the generation of full DNA profiles.