THE UTILITY OF THE FTA® GENE GUARD SYSTEM FOR ANALYSIS OF BUCCAL SWAB TRANSFERS

Courtney M. Lappas[1], Markus Hunkeler[2] and Mindy D. Goldsborough[2]
[1]*University of Richmond, Department of Biology*
[2]*Life Technologies, Inc.*

The collection of blood samples for use in human identification and genome studies is an invasive and labor intensive procedure. Costs can be considerable, especially if sampling from remote geographical locations is required. Buccal swabs, however, provide an attractive alternative. Sampling is non-invasive, painless and does not require specially trained personnel, significantly minimizing costs. Collection is so simple that samples can be obtained by the donors themselves.

Traditional methods for processing DNA from buccal swabs generally involve immersion of the swab in a liquid medium in order to release the cells from the sampling device, either at the time of sampling or just prior to DNA purification. This method of sample handling is often problematic. Among the issues are degradation of DNA prior to extraction, and shipping of liquid samples. The use of FTA® paper in conjunction with buccal swabs provides a convenient solution to these, and other issues.

FTA® paper has been shown to be a simple and effective device for the collection, archiving and processing of blood samples. We have investigated the feasibility of collecting, archiving, purifying, and analyzing DNA samples from buccal swabs directly transferred to FTA® paper. Data will be shown using standard FTA® paper and a new, improved version that aids in visualization of the location of the buccal sample.

The analysis of genomic DNA from such samples is facilitated by the washing of a 1.2 mm or 2 mm FTA® punch with FTA® Purification Reagent (non-organic, non-toxic) followed by TE. We show through the use of several PCR primer sets, yielding amplicons from approximately 150 bp to >12 Kb, that these techniques can be successfully performed on punches from multiple, and varied locations from buccal swabs transferred to FTA® paper. In addition, results will be shown from primary and secondary buccal swab transfers and from saliva on FTA® paper. Analysis methods include both agarose and acrylamide gel electrophoresis methods for the detection of unlabelled and fluorescently labeled amplicons. In addition, the stability of DNA from buccal swabs collected on FTA® will be discussed.