

## DNA in Samples Prepared Using the Maxwell 16 Instrument Are Free of Detectable Cross Contamination

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### Introduction

One of the main concerns with automated sample processing is the possibility of instrument-related sample cross contamination. This is especially true in clinical laboratories. Automated liquid handling instruments can drip, spray or create aerosols from reagents. Paramagnetic-particle handling instruments can splash reagents during plunger mixing. The Maxwell 16 System provides high performance and superior ease of use, while limiting the incidence of cross contamination. This system is composed of the Maxwell 16 instrument and kits containing prefilled reagent cartridges. The unique design of the plunger and optimized automated methods provide robust, reproducible results with no detectable cross contamination. Here we present data from qualitative PCR and real-time qPCR assays of DNA prepared using the Maxwell 16 Instrument and demonstrate that there is no detectable cross contamination among samples.

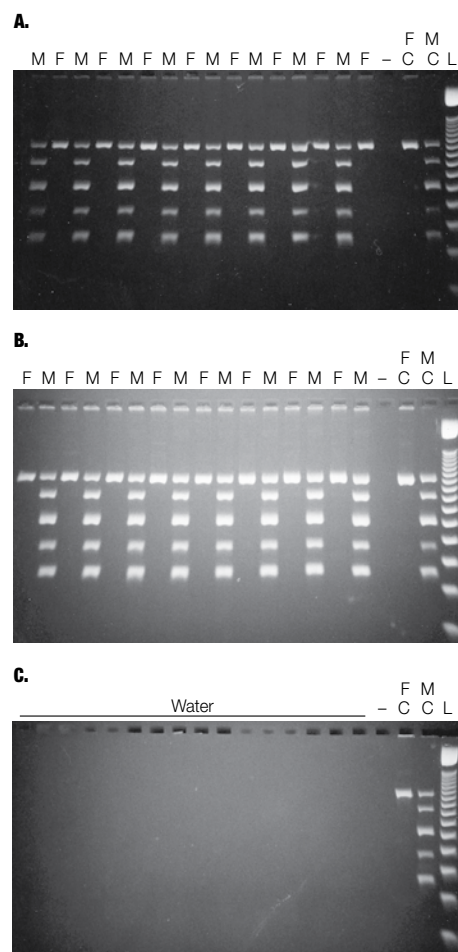
### Methods

DNA was purified from 300µl blood samples obtained from male and female donors using the Maxwell 16 Blood DNA Purification Kit (Cat.# AS1015 and AS1050) and the Maxwell 16 instrument. Three purification runs were performed with no cleaning steps between runs to assess cross contamination potential between instrument runs. For the first run, male and female blood samples were loaded in alternating cartridges, beginning with male samples. For the second run, male and female blood samples were loaded in alternating cartridges beginning with female samples. For the third run, 300µl of nuclease-free water was loaded in each of the cartridges. Table 1 shows the amount of DNA detected during these runs as assessed by the Plexor<sup>®</sup> HY System, a real-time qPCR system, which can measure the concentration of autosomal and Y-chromosomal DNA independently. Note that in the female samples, no male DNA was detected at 35 cycles.

Table 1. DNA detection by qPCR. No detectable cross contamination.

Run#	DNA Sample	Autosomal DNA	Y-Chromosome
Run 1	Male	87.8	39.6
Run 1	Female	149.5	0.0
Run 2	Male	149.5	37.4
Run 2	Female	142.5	0.0
Run 3	Water	0.0	0.0

Panel A, B and C of Figure 1 shows the results of qualitative PCR analysis of the extracted DNA with the Y Chromosome Deletion Detection System, Version 2.0 (Cat.# MD1531). Notice that even without cleaning steps between runs, no male DNA is detected in any of the female DNA samples, and the water-only run does not contain any contaminating DNA.



**Figure 1. No Detectable Cross Contamination by qualitative PCR. Panels A and B.** DNA was purified from 300µl blood samples obtained from male and female donors. Male (M) and female (F) samples were loaded in alternating cartridges; the extracted DNA was subjected to qualitative PCR, and the amplification products visualized on a gel. **Panel A.** Extraction from male and female samples, loaded with the male samples in the odd-numbered cartridges (first run). **Panel B.** Extraction from male and female samples, loaded with the female samples in the odd-numbered cartridges (second run). **Panel C.** Nuclease-free water loaded in all cartridges, subjected to the extraction protocol and amplification. Lanes: -, negative PCR control; FC, female control DNA; MC, male control DNA; L, 50bp Step Ladder.

