

ScreenTape® provides convenient detection of multiplex PCR fragments

The Lab901 ScreenTape System simplifies the analysis of multiplex PCR assays. Pre-packaged reagents and full automation dramatically reduce the time to result. Tailored analysis software can provide an option for a simple positive or negative readout, eliminating the need for lengthy gel analysis.

Introduction

Multiplex PCR uses multiple primer sets to amplify different targets, within one reaction tube. This challenging technique requires extensive PCR optimisation, followed by time-consuming gel electrophoresis. The Lab901 ScreenTape system can significantly improve the laboratory workflow by rapidly producing accurate and reproducible results. This allows the researcher to develop multiplex PCR assays quickly and efficiently.

Materials and Methods used in the multiplex PCR assay

Viral DNA extraction was performed on the host plasma. The extract was simultaneously probed for four lamivudin-resistant hepatitis B viruses, using specific primers targeted to amplify the YVDD, L528M, YSDD and YIDD single nucleotide mutations.

ScreenTape DNA Analysis Procedure

Samples from the PCR block were mixed 1:1 with Lab901 loading buffer and placed in the TapeStation along with D800 ScreenTape and a DNA ladder. Using a simple software-driven menu, full analysis of 7 samples was achieved in less than 10 minutes.

Results

The analysis software was launched immediately and presented each of the samples in turn, with the corresponding fragment lengths for each band. Selecting the 'band-matching' option identified those fragments in the sample that gave a positive readout for the bands of interest in the positive control (see Figure 1, lane 1). A tabulated matching matrix provided a simple readout, identifying matching bands with 'X'.

ScreenTape used

D800

Convenient set up

No reagent preparation

No gel loading

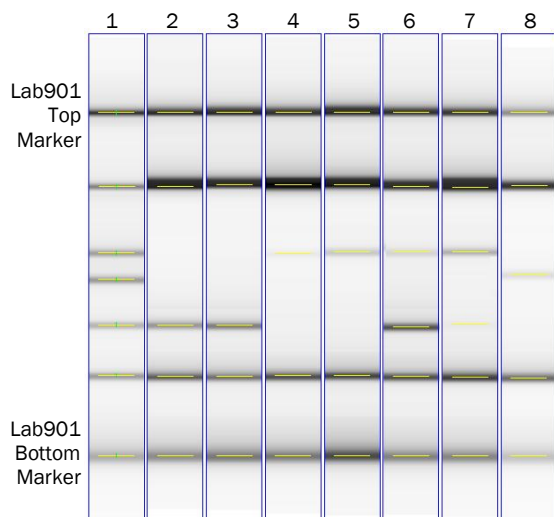
No manual analysis

Total time

10 minutes

Sample volume used

1 µl



Benefits of using ScreenTape

The automated ScreenTape system automates and deskills the electrophoresis process, minimising the need for manual intervention. It is easy to use and reduces the potential for human error. The analysis software enables digital archiving for simple retrieval and result comparison.

Figure 1: Representative band-matching gel image with tabulated matching matrix. Lane 1 contains the positive control.

	Results for selected track	Results for all tracks	Matching comparisons	Matching matrix	Matching coefficients			
	rack 1 (A2)	rack 2 (B2)	rack 3 (C2)	rack 4 (D2)	rack 5 (E2)	rack 6 (F2)	rack 7 (G2)	rack 8 (H2)
Peak								
1	X	X	X	X	X	X	X	X
2	X	X	X	X	X	X	X	X
3	X			X	X	X	X	
4	X							X
5	X	X	X			X	X	
6	X	X	X	X	X	X	X	X
7	X	X	X	X	X	X	X	X