

Comparison of the automated plate assessment system (APAS) to manual plate reading of surveillance screening cultures – a diagnostic study

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Background: Samples screening for Vancomycin resistant Enterococci (VRE) and Methicillin Resistant *Staphylococcus aureus* (MRSA) can account for a relevant amount of samples in clinical microbiology laboratory. Automated plate assessment could help to free resources in the workflow of a clinical microbiology lab.

Methods: We prospectively evaluated performance of the automated plate assessment system (APAS) compared to experienced technicians (figure 1). Routine screening samples sent to our lab for detection of VRE and MRSA were included into the evaluation. Samples screening for VRE were plated on Brilliance VRE chromogenic agar plates and Samples screening for MRSA were plated on Brilliance MRSA/CNA Biplates (Oxoid). Incubation and reading was performed according to manufacturers recommendations.

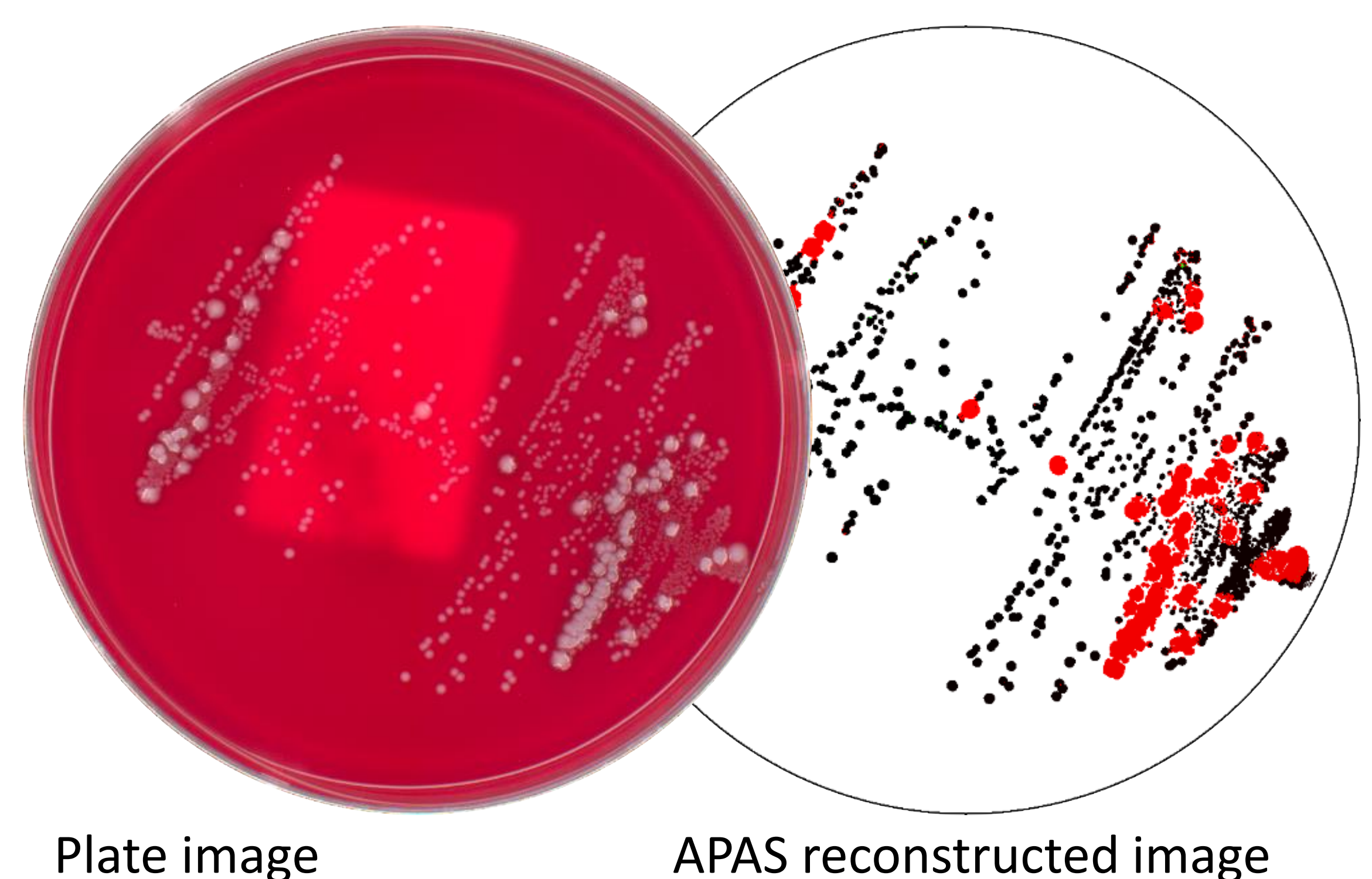


Figure 2: Plate image and reconstructed image of APAS.

Statistic	Value	VRE		MRSA	
		Value	95% CI	Value	95% CI
Sensitivity	100.00%	63.06 to 100.00	100.00%	81.47 to 100.00	
Specificity	94.95%	88.61 to 98.34	96.55%	94.91 to 97.78	
Positive Likelihood Ratio	19.80	8.43 to 46.52	29.00	19.57 to 42.97	
Negative Likelihood Ratio	0.00		0.00		
Positive Predictive Value (*)	61.54%	40.51 to 78.99	42.86%	33.61 to 52.63	
Negative Predictive Value (*)	100.00%		100.00%		

Table 1: Diagnostic performance of APAS compared to technicians.

Results: We included a total of 816 Samples. Of the 102 samples sent for VRE we detected 8 VRE. *E. faecium*. APAS did select an additional 5 false positive plates for review. Of the 714 samples sent for MRSA we detected 14 MRSA. APAS did select an additional 24 false positive plates for review. No false negatives occurred with the APAS.

Conclusion: APAS securely identified positive MRSA and VRE screening cultures. Automated reporting of negative samples could increase resources of technicians time.

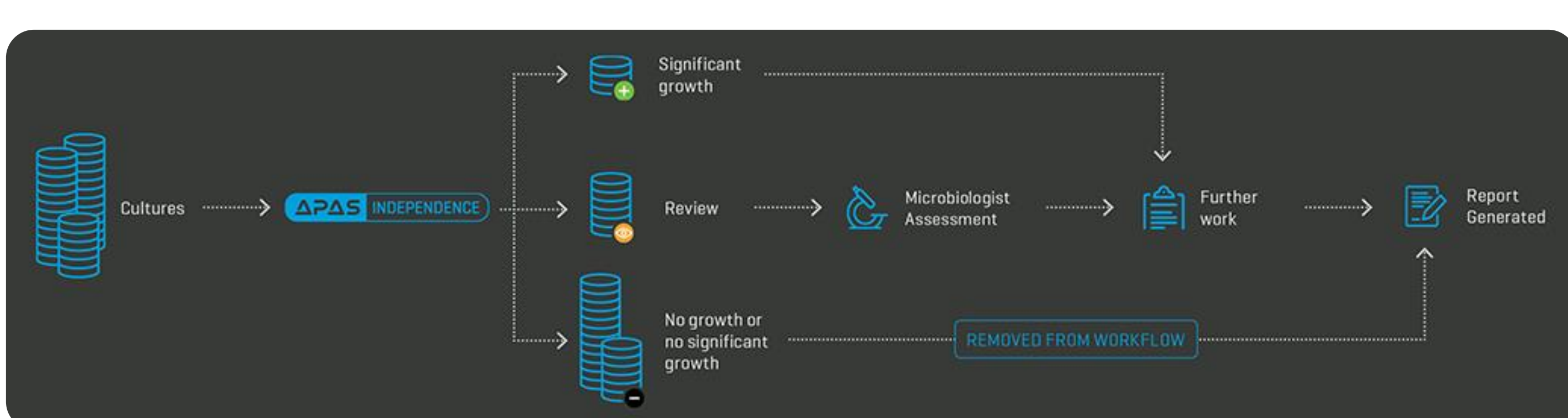
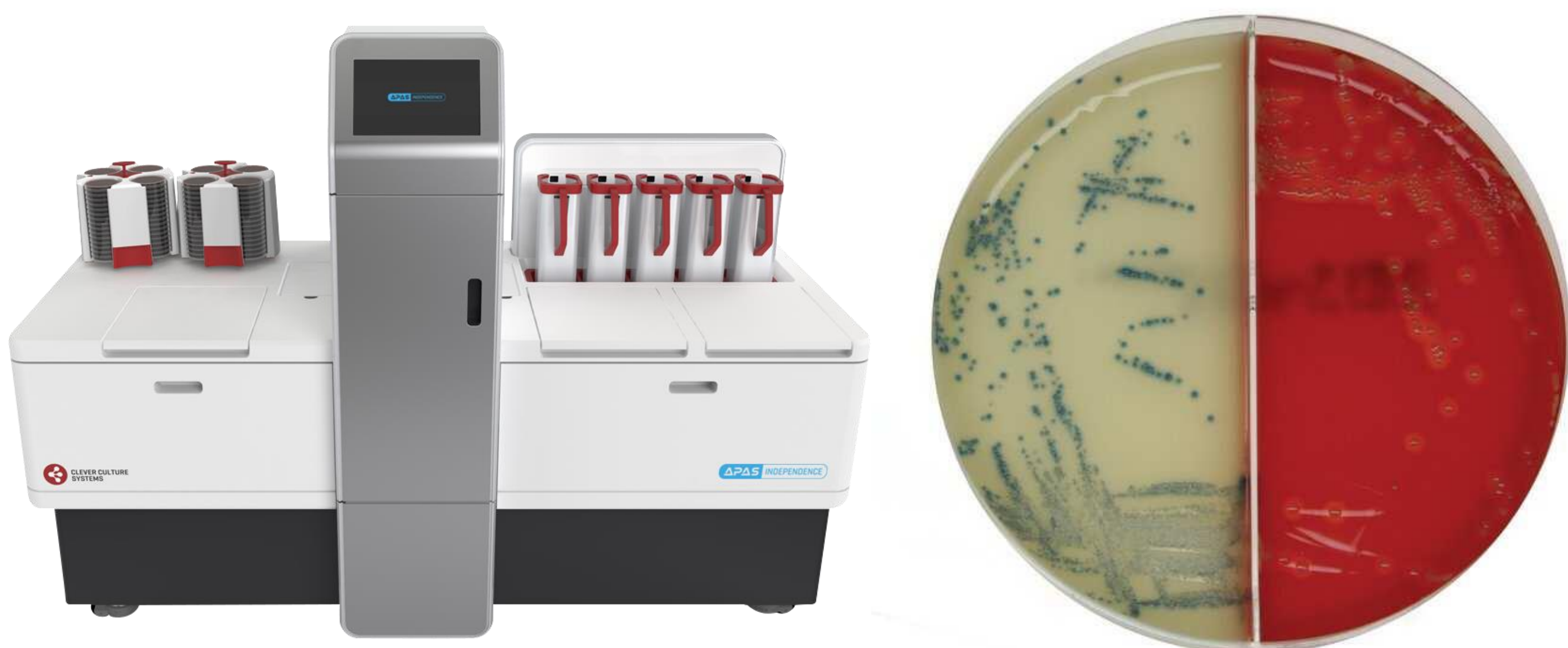


Figure 1: APAS independence, Brilliance MRSA biplate and Impact workflow.