

# How could Total Laboratory Automation and Artificial Intelligence improve Urine Culture management in Clinical Microbiology?

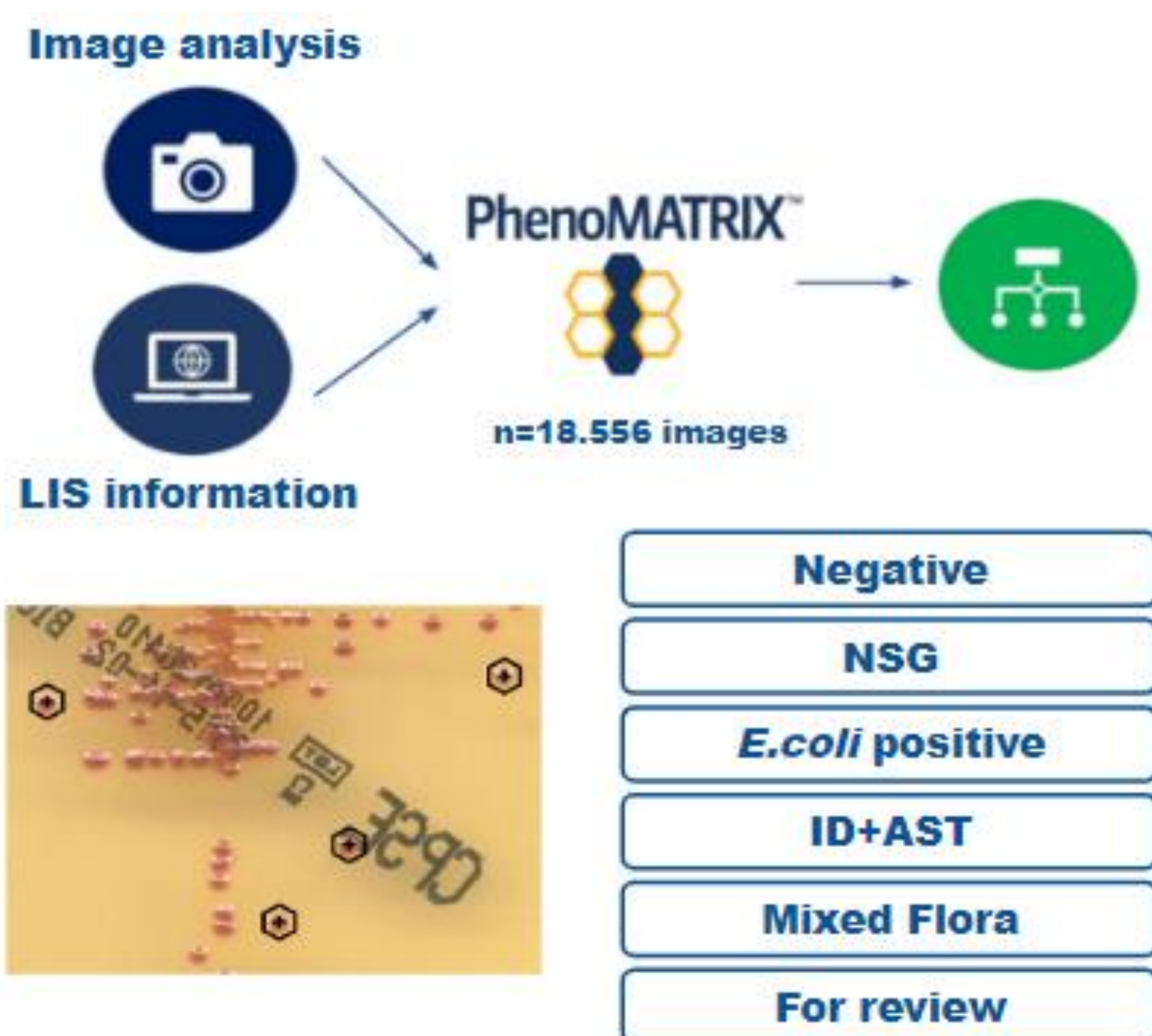
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## Background

Urine culture is the most requested test in microbiology laboratories, generating a high workload. Total Laboratory Automation and Artificial Intelligence (AI) could reduce the hands-on-time.

The aim of the present study is to analyse the combined use of the WASPLab® automated solution and the AI PhenoMATRIX® (Copan) as key tools to reduce the time of urine culture screening processes.

## Materials and Methods



## Results

PM default result (%)	Assigned workup	Agreement by LT: second review (n)
<i>E.coli</i> positive (10.7%)	AST Preparation	99.3% (1.954/1.967)
Negative (13.6%)	No further steps	100% (2.523/2.523)
NSG (9.3%)	No further steps	97% (1.682/1.734)
For reincubation (26.5%)	No associated workup	-
ID+AST and Mixed Flora (31.5%)	Manual Processing	-
For review (8.4%)	Manual Processing	-

**Table 1. PhenoMATRIX (PM) default results compared to Laboratory Technician (LT) agreement.** PM sorted the images into different folders: “E.coli positive (16h)”, “Negative (36/48h)”, “Non-significant growth (NSG) (36/48h)”, “For reincubation (16h)”, “Plates for identification and antimicrobial susceptibility testing (ID+AST)/Mixed Flora” and “For review”. The combination of equivalent results is shown in the second review. Manual processing and no associated workup folders are not included in the concordance by LT analysis.

## Conclusions

The ‘**Negative**’ folder showed remarkable results at final incubation time, encouraging the potential for **automatic discarding** without confirmation, with **no false negatives**. Nevertheless, 8.4% of the images were classified ‘for review’.

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