



Abstract (Revised)

Background: *Candida auris* (CA) is an emerging multi-drug resistant yeast first reported in the US in 2015. It has been associated with multiple outbreaks particularly in nursing homes and long-term care facilities and surveillance screening of high-risk patients for skin colonization is desirable. Reports suggest that routine laboratory methods may be unable to correctly identify CA as it is phenotypically closely related to other *Candida* species. In this study, we evaluate the performance of a new chromogenic agar, the Candida Plus CHROMagar Colorex (C+) in combination with a WASPLab PhenoMATRIX algorithm for the detection of CA (CA-PM) directly in surveillance specimens.

Methods: C+ is a selective chromogenic medium that detects and differentiates CA from other *Candida* species. Results can be interpreted after 24-48 hr of aerobic incubation at 30-37°C. CA-PM reviews images of C+ cultures and analyzes them for the presence of CA using artificial intelligence algorithms. Specimens used in the study included nares, axilla and groin swabs collected between March and October 2022. An additional 50 spiked samples were also included. Images were captured at 36 and 48 hr. Sensitivity and specificity of the CA-PM was determined using MALDI-TOF-MS ID on Sabouraud Dextrose Agar (SDA) as the gold standard. Performance of the CA-PM was calculated before and after discrepant analysis via secondary image review.

Results: 708 cultures were available at 36 hr. The sensitivity and specificity of the CA-PM algorithm was 97.8% and 99.5% initially, and 100% and 99.8% following discrepant analysis. Four samples had initial discrepant results including 1 CA positive (negative by CA-PM) and 3 CA negative (positive by CA-PM). Following discrepant analysis, 2 samples were considered true positives. 701 cultures were available at 48 hr. The sensitivity and specificity of the CA-PM was 100% and 99.1% initially, and 100% and 99.4% following secondary image review. Six samples had initial discrepant results including 6 CA negative (positive by CA-PM). Following secondary review, 4 samples were considered true positives.

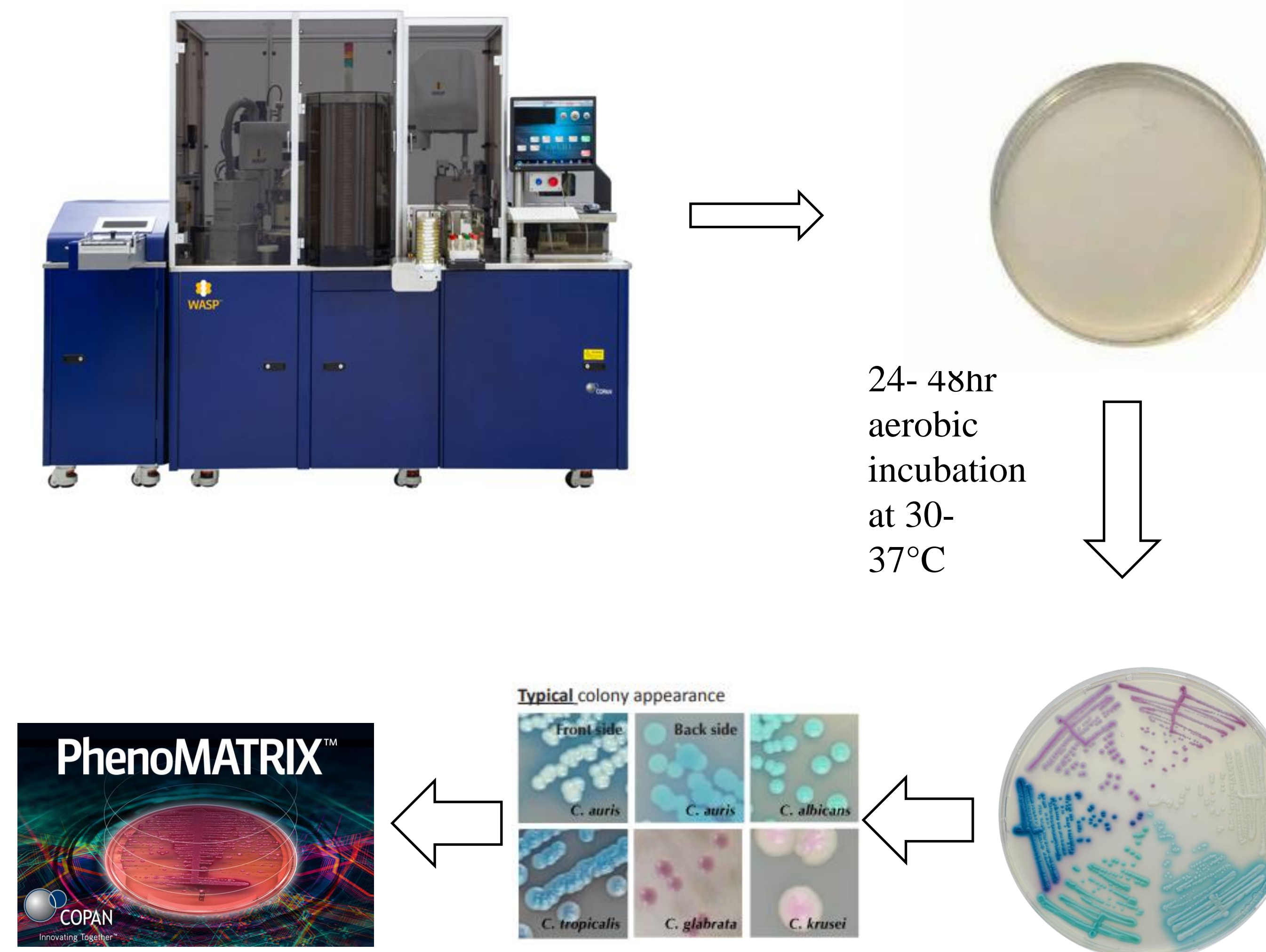
Conclusions: The use of the Candida Plus CHROMagar Colorex™ in combination with the Copan PhenoMATRIX algorithm showed 100% sensitivity and > 99% specificity for the detection of CA in surveillance swab specimens at both 36 and 48 hr. Evaluation of the CA-PM for earlier time points (e.g., 24 hours) could provide additional value for laboratories.

Background

- Candida auris* is an emerging multi-drug resistant yeast and have been the cause of many outbreaks over the years
- Constant surveillance testing with accurate identification is necessary for early identification and treatment plan in at-risk population
- This study focuses on use of Candida Plus CHROMagar Colorex (C+) in combination with a WASPLab PhenoMATRIX algorithm for the detection of *Candida auris* accurately

Materials and Methods

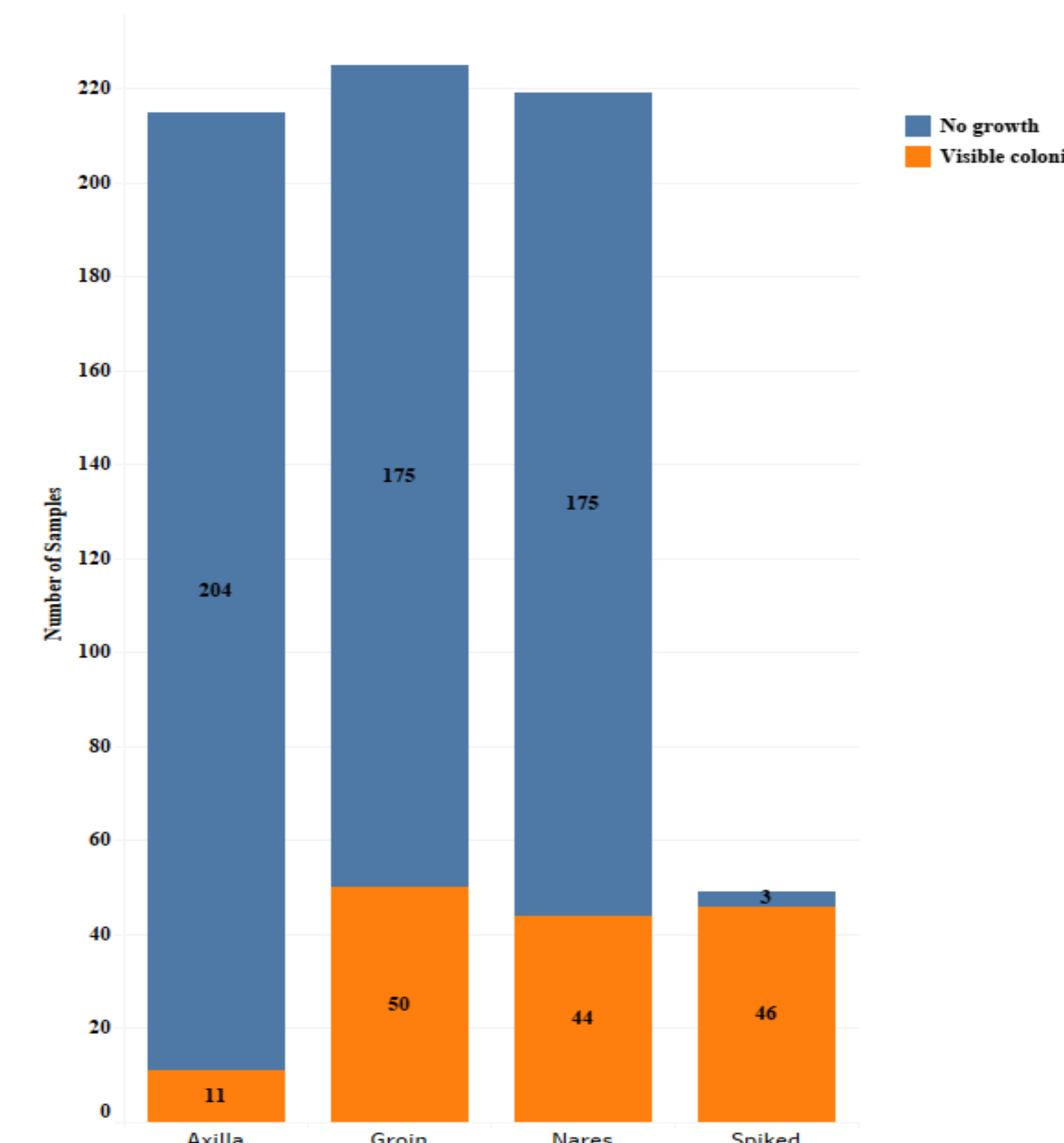
- Study period: March 2022 to October 2022
- Samples
 - Surveillance samples received for *C. auris* PCR and set-up within 24 hours of receipt
 - E-swab samples spiked with *C. auris* isolates
- Compared Identification agreement by MALDI vs ID by CA-PM



Results

- Total valid cultures available at 36 hr: 708
- Total valid cultures available at 48 hr: 701

Figure 1: Study Sample Type Distribution



Results

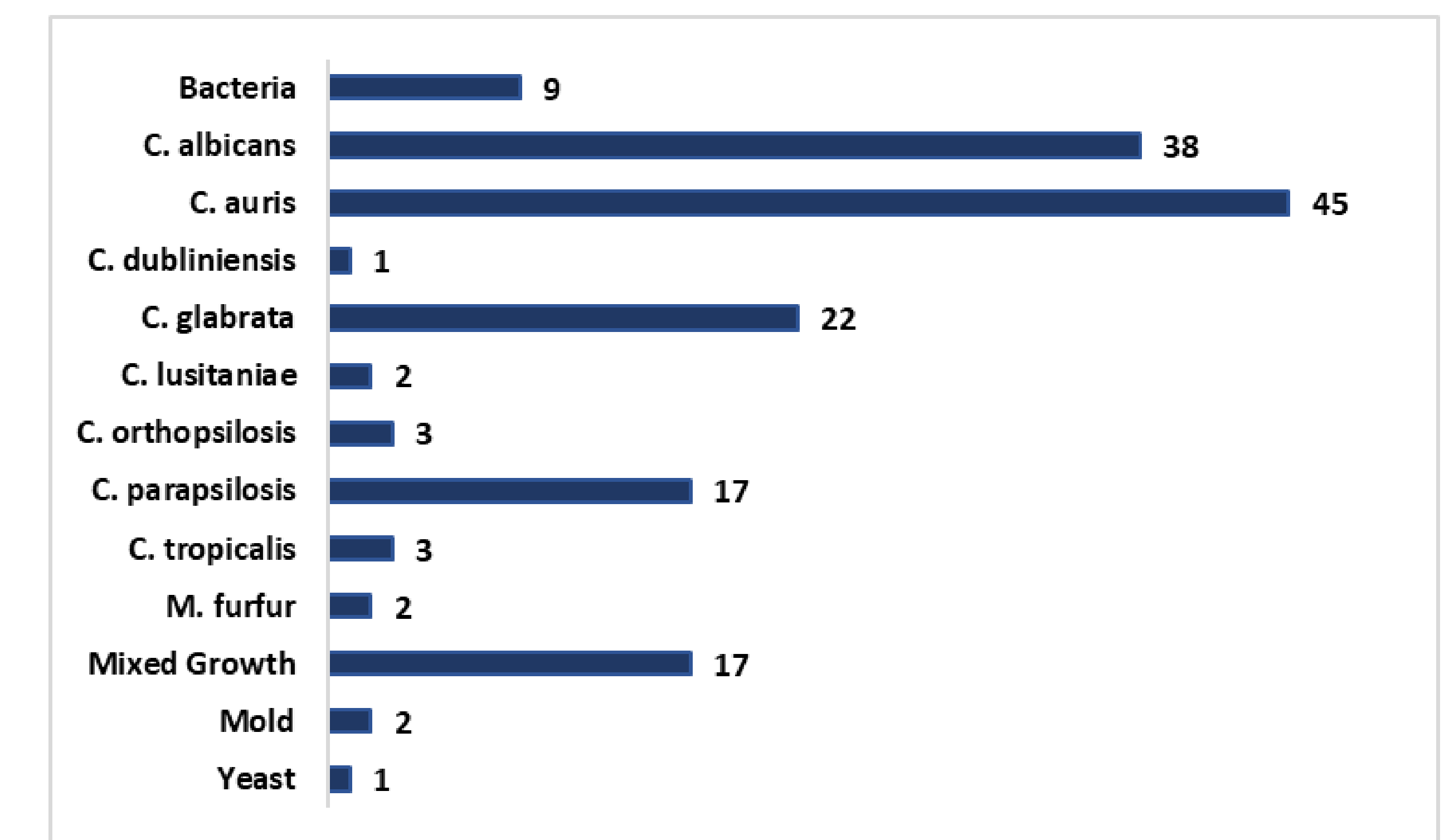
Table 2: 36hr Algorithm Sensitivity and Specificity

36 Hour Results		
	SDA/MALDI Positive	SDA/MALDI Negative
CA-PM Positive	46	1
CA-PM Negative	0	661
Sensitivity: 100.0% (95% CI: 92.8-100.0)		
Specificity: 99.7% (95% CI: 98.9-99.9)		

Table 3: 48hr Algorithm Sensitivity and Specificity

48h Hour Results		
	SDA/MALDI Positive	SDA/MALDI Negative
CA-PM Positive	42	4
CA-PM Negative	0	655
Sensitivity: 100.0%(95% CI: 91.2-100.0)		
Specificity: 99.4% (95% CI: 98.5-99.8)		

Figure 2: Culture Growth Breakdown



Conclusions

- The CHROMagar Colorex and Copan PhenoMATRIX algorithm had 100% sensitivity at >99% specificity at 36hr and 48hr.
- Additional evaluation of earlier timepoints would have additional value for laboratories.