

REAL-TIME DETECTION OF CFU GROWTH WITH THE SCANSTATION SMART INCUBATOR EXPEDITES THE ENVIRONMENTAL MONITORING PROCESS

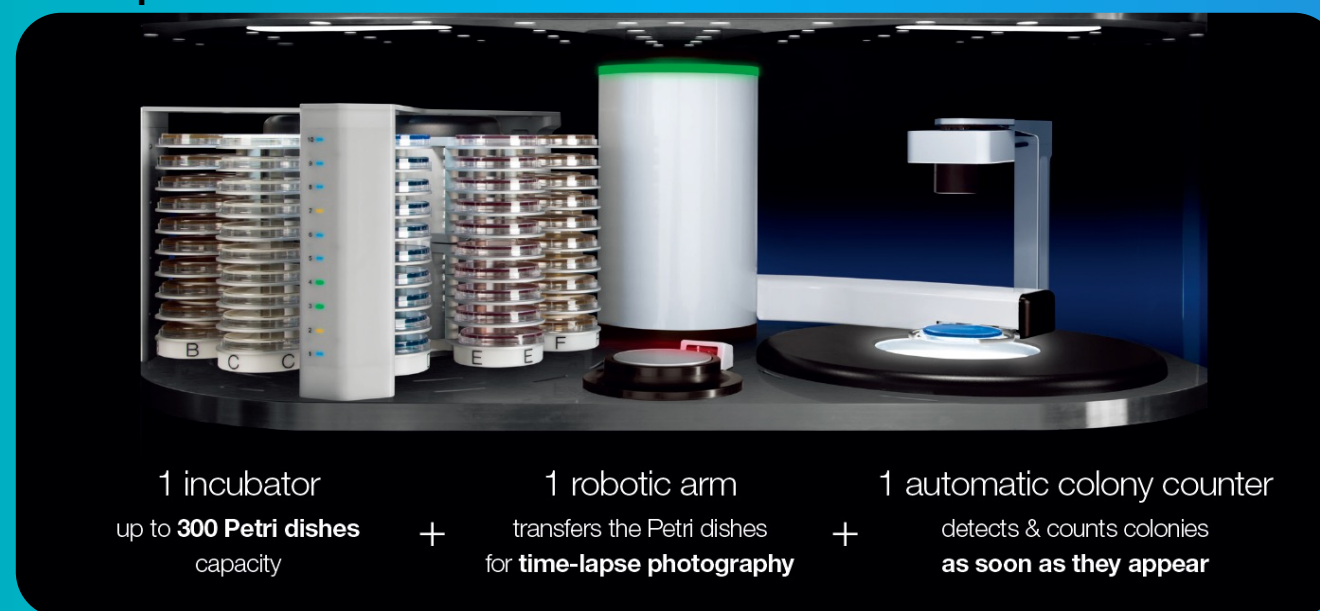
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Introduction

In a time when an increasing number of laboratories are turning to rapid methods for their analysis, the responsibility is often on the end-user to validate an alternative method (e.g., PCR, mass spectrometry) against the traditional, manually counted sample-on-agar cultures. INTERSCIENCE developed the ScanStation (ISS) in the aim of providing advanced results, while still utilizing the traditional method (approved by the European Pharmacopoeia and the FDA). This system is an innovation based on the technology of end-point colony counters that have been used in labs for over forty years^{1,2}.



Principle:



Questions:

1. Is the ScanStation accurate enough to be implemented in a microbiology lab for CFU enumeration?
2. What is the time saving for enumeration by using the ScanStation?

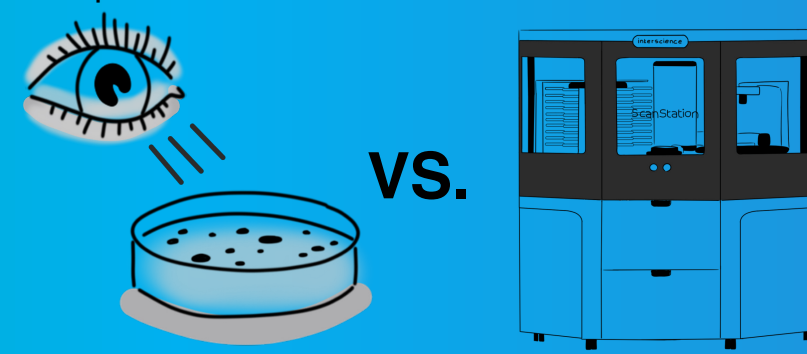
Material and method

Microorganisms and incubation parameters

Strains	Plating mode	Volume (µL)	Temperature (°C)	Incubation time (days)	Number of samples
<i>Staphylococcus aureus</i> (ATCC 6538)	Surface	100	30-35	5	47
<i>Escherichia coli</i> (ATCC 8739)	Surface	100	30-35	5	12
<i>Pseudomonas aeruginosa</i> (ATCC 9027)	Surface	100	30-35	5	23
<i>Candida albicans</i> (ATCC 10231)	Surface	100	20-25	5	18
<i>Aspergillus brasiliensis</i> (ATCC 16404)	Surface	100	20-25	5	14
Total flora	Passive sedimentation	N/A	30-35 and 20-25	7	122

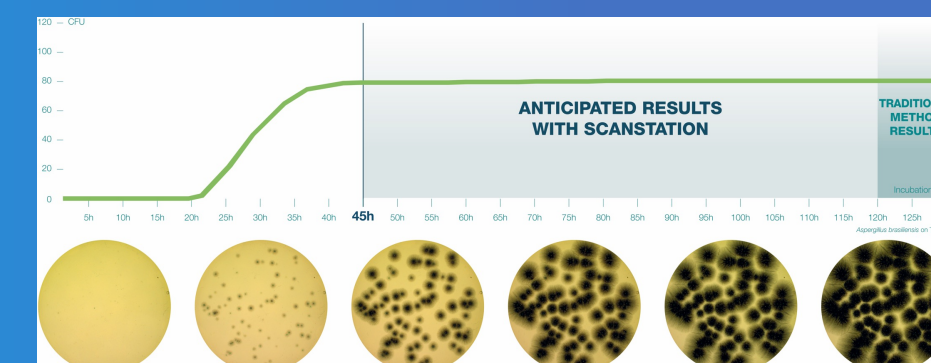
1. ScanStation enumeration evaluation

- Plating of pure strains or real air samples on TSA
- Incubation in the ScanStation
- Real time microbial kinetics (software version 1.30)
- Comparison of manual vs. ScanStation enumeration^{3,4}



2. Time to result

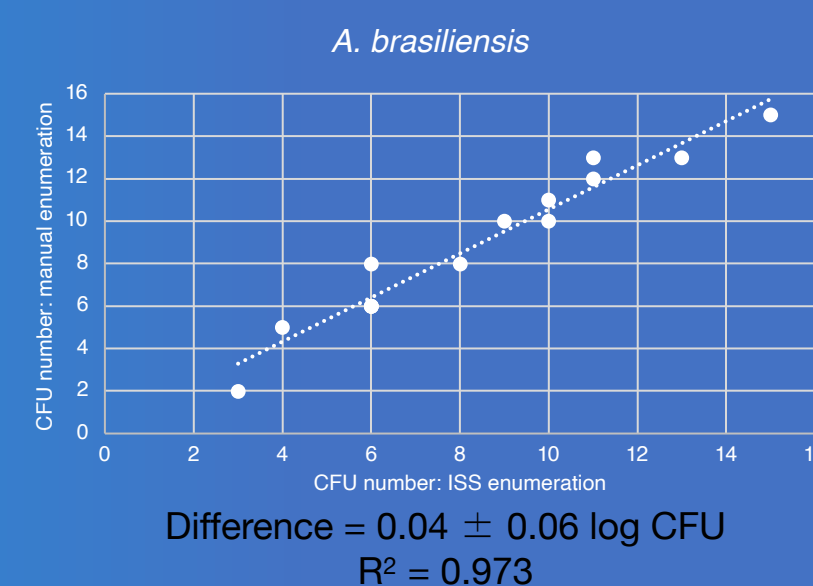
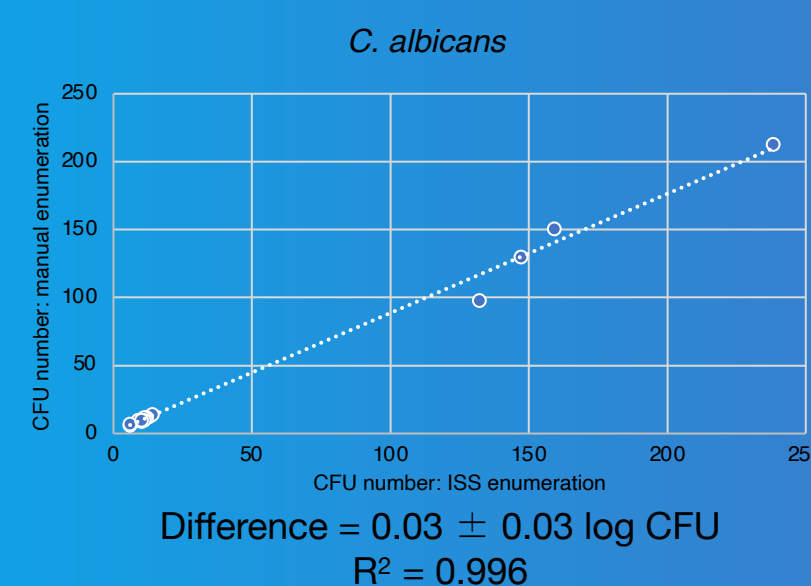
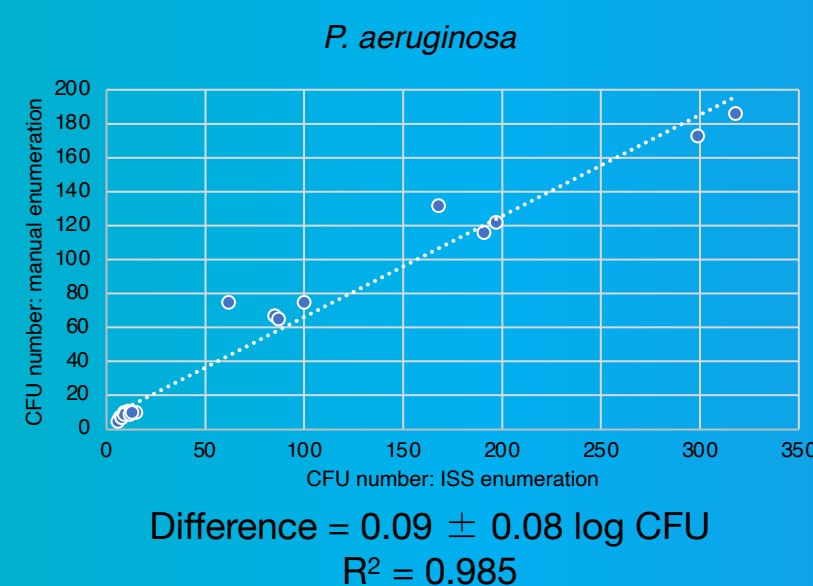
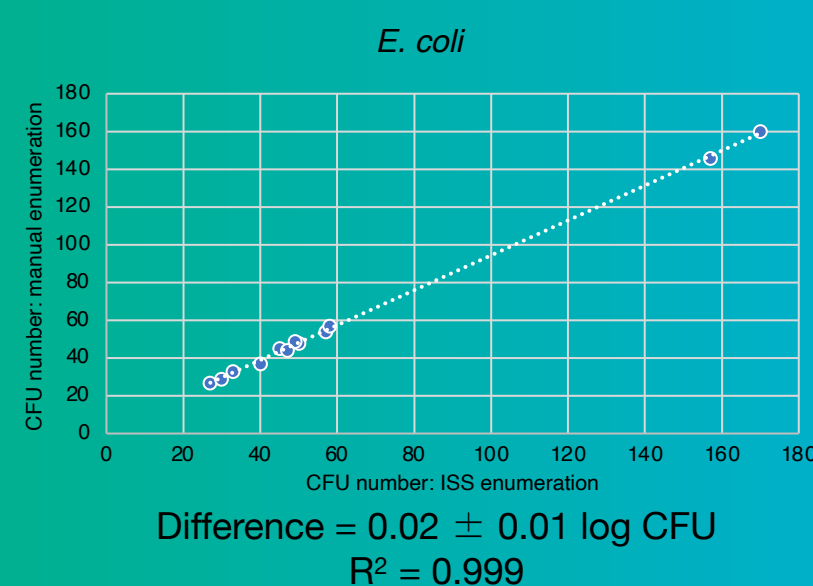
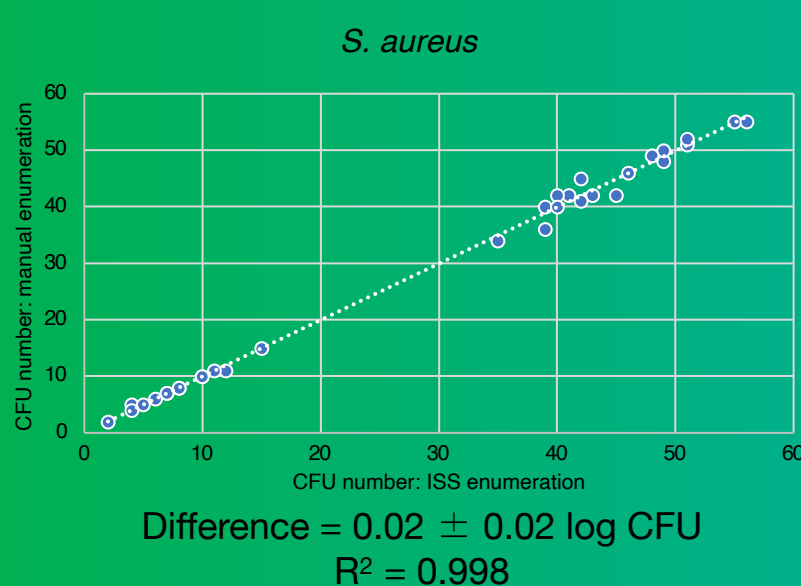
- Real time enumeration every 30 min ScanStation
- Graph of microbial growth
- Measurement of primary CFU detection and 85% of result⁵



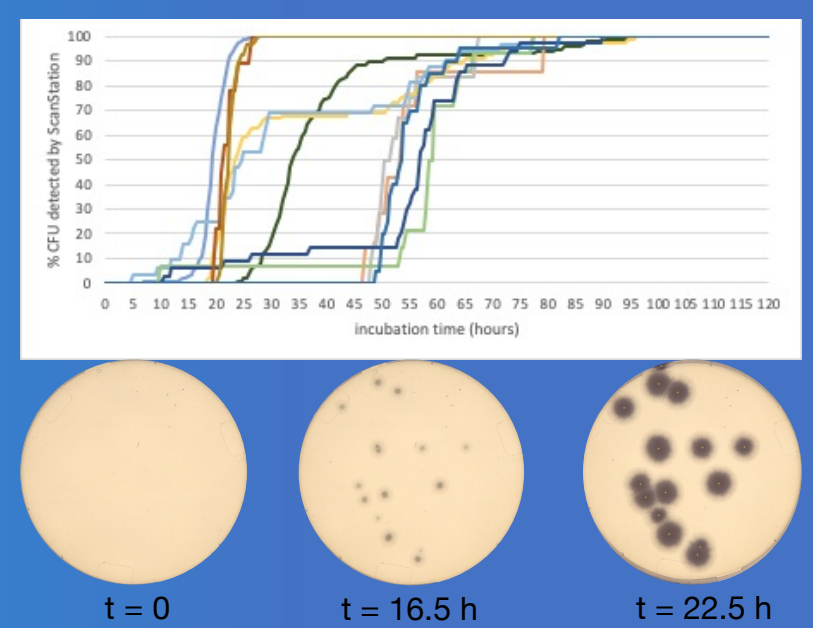
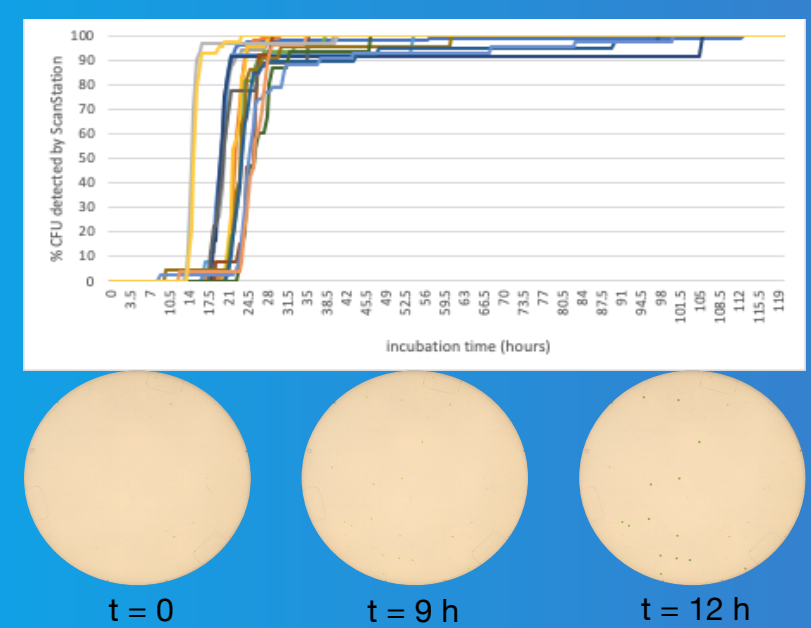
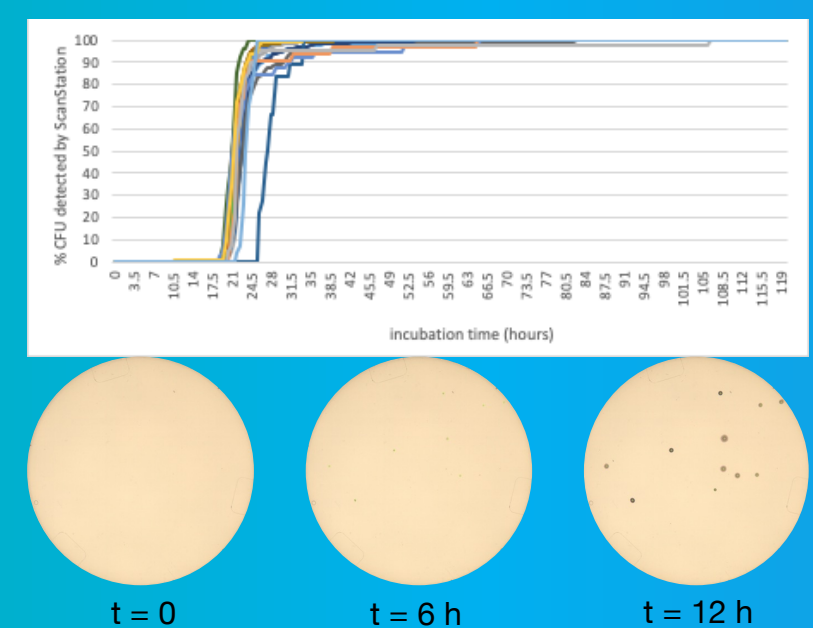
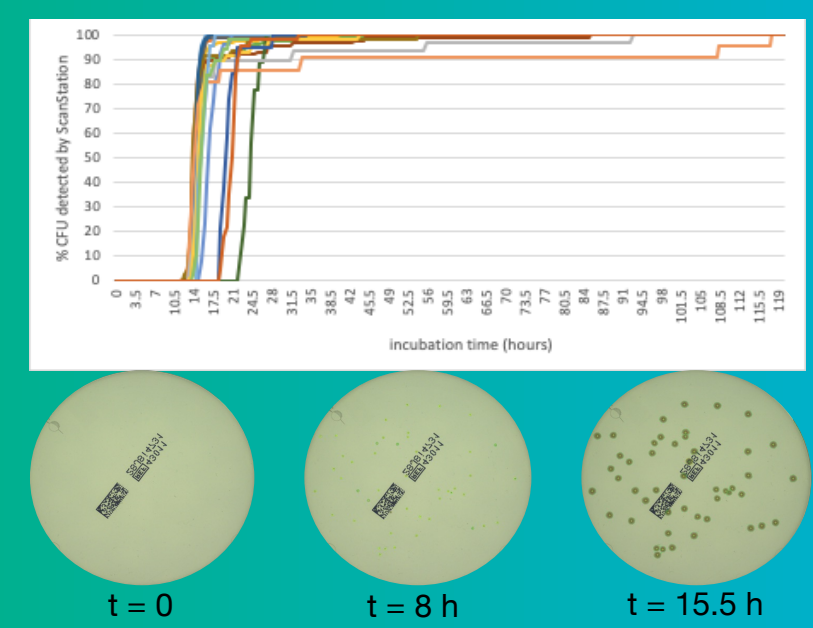
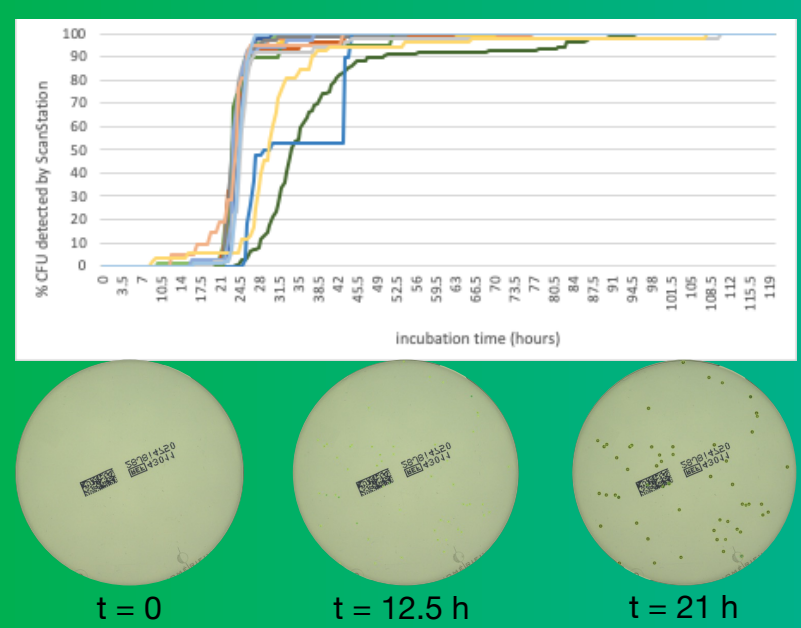
Results

A. ScanStation evaluation with pure strains

1. Enumeration comparison

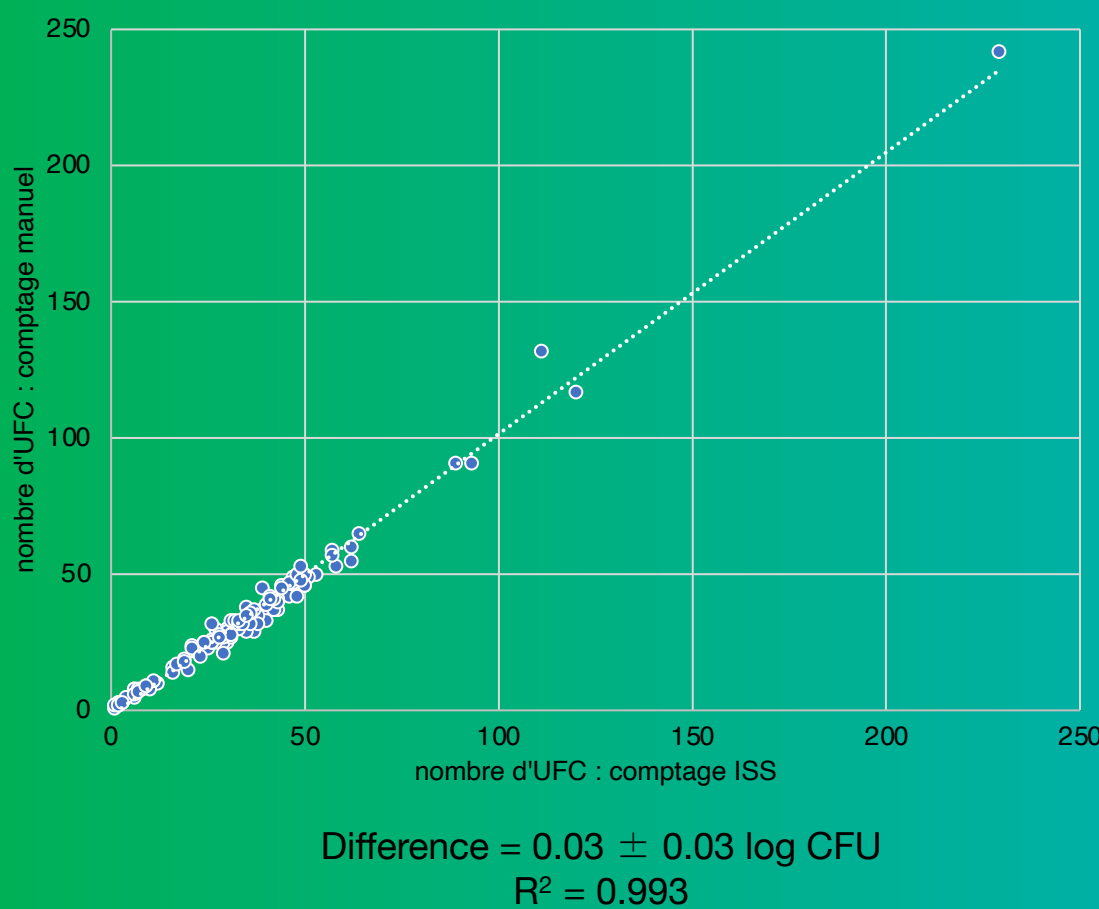


2. Time to result

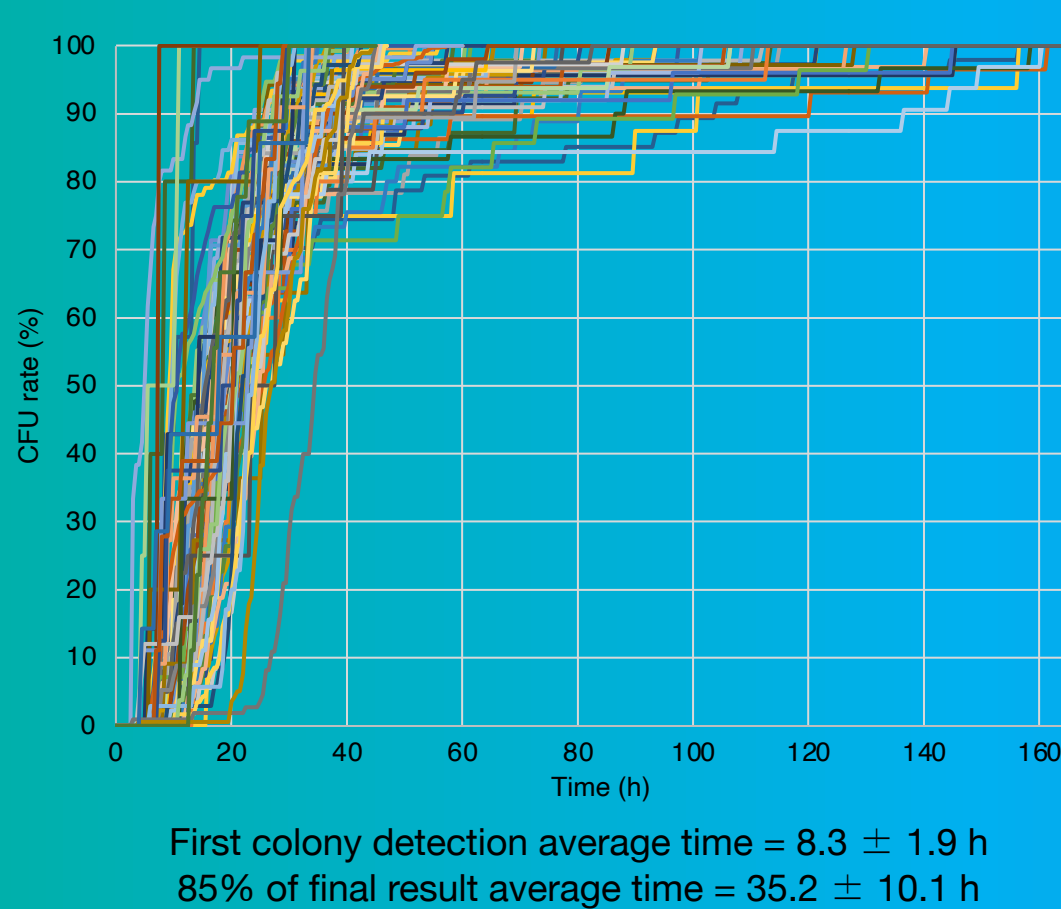


B. ScanStation evaluation with air samples from pharmaceutical labs

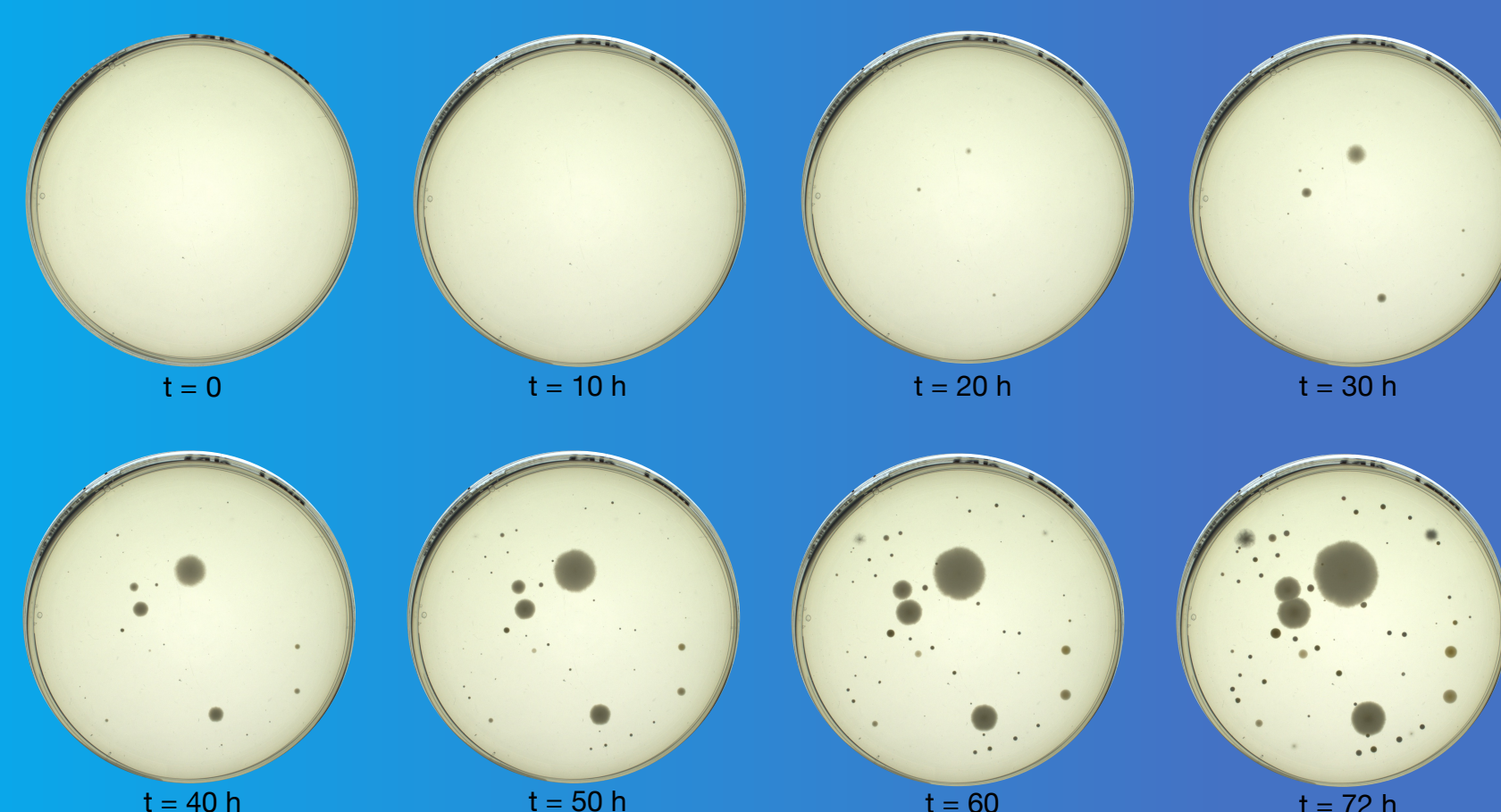
1. Enumeration comparison



2. Time to result

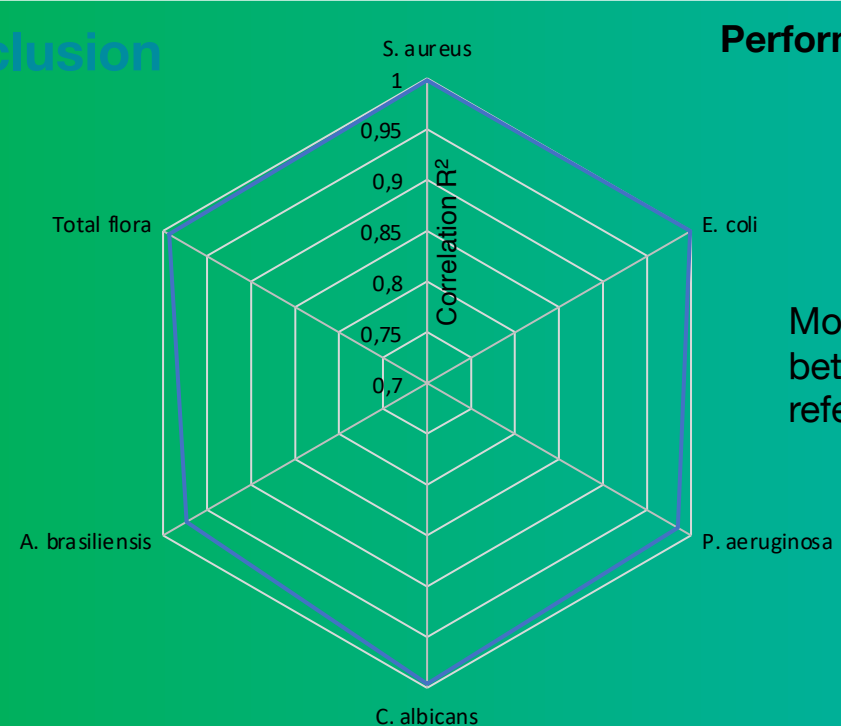


3. Representative photos of the same plate taken at different points of the incubation time



Conclusion

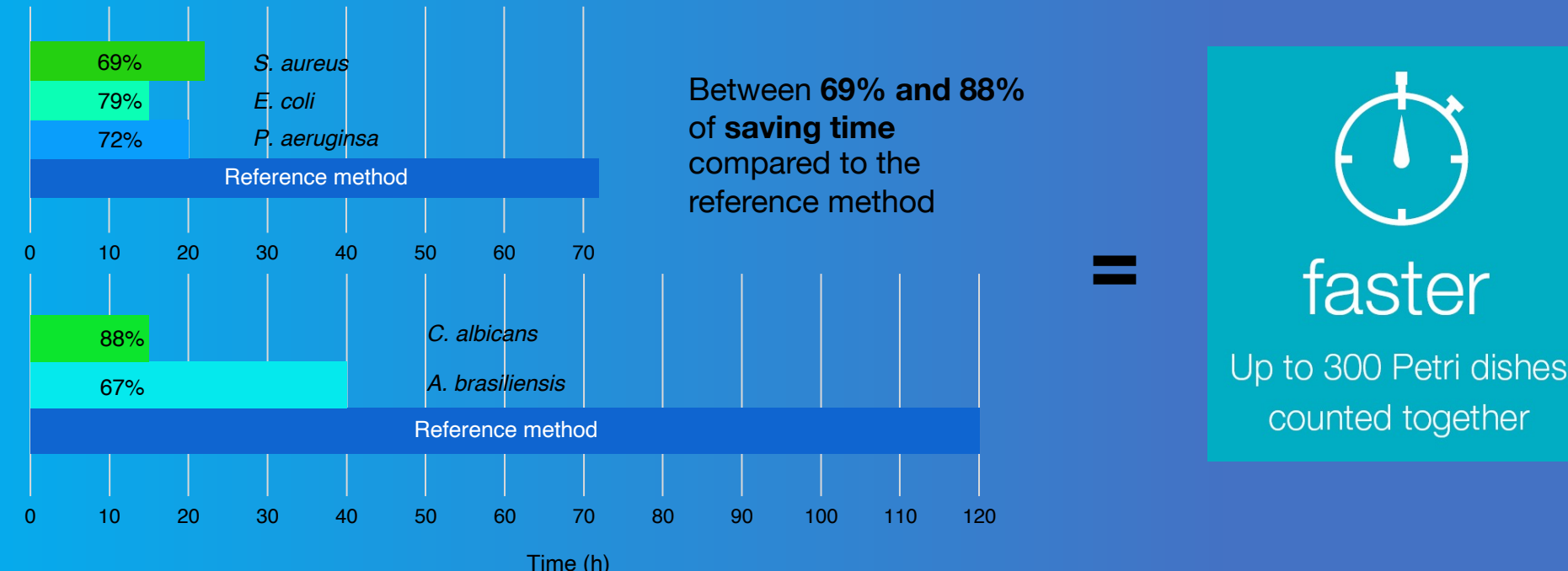
Performance evaluation



More than **99%** of correlation between ScanStation and reference manual counting

accurate
Elimination of artefacts

Time to result



Between **69% and 88%** of saving time compared to the reference method

faster
Up to 300 Petri dishes counted together

References

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