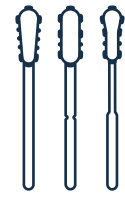


*Clinical Microbiology  
Automation Solutions*

Streamline Your  
Laboratory  
Workflow





Collection



Transport



Processing



Artificial Intelligence

**Comprehensive Preanalytics, from Sample to Interpretation**

**Today's microbiology laboratories face tough challenges.** Increased workloads, labor shortages and the impending retirement boom of Medical Technologists and laboratory professionals have compelled laboratories to look for more efficient, cost-effective ways to process the influx of samples.

### **Technology that Serves Microbiology Laboratories**

Copan is committed to providing comprehensive solutions for preanalytics.

With unsurpassed innovation and relentless collaboration, Copan offers solutions to laboratories around the world, helping laboratory professionals face challenges head-on. From the first automated specimen processor prototype to more than 1,000 instruments worldwide, Copan has solicited input from the Microbiology community.

As a result, Copan's full laboratory automation systems are designed to be open, modular, and forward compatible, to meet the needs of each unique laboratory today and tomorrow.

## Innovation to

# Improve Outcomes

MICROBIOLOGY IS ONE OF THE MOST LABOR-INTENSIVE DISCIPLINES WITHIN THE CLINICAL LABORATORY FIELD, and its role is of vital importance to overall healthcare.

It is well established that laboratory professionals are asked to do more with fewer resources and to consistently demonstrate the value of laboratory medicine in clinical outcomes.

The automation and Artificial Intelligence (AI) algorithms developed by Copan combine the unparalleled human intelligence of the Microbiology community, with the invaluable asset of AI to help laboratories amplify their resources to provide faster actionable results to clinicians.

## Increase Productivity and Decrease Cost

According to a multi-center study<sup>1</sup>, Full Laboratory Automation can almost double productivity in the microbiology laboratory and halve the cost-per specimen, regardless of the laboratory size, specimen load or location. In addition, data shows that the turnaround time (TAT) for urine cultures can be improved from 16% finalized within 24 hours to almost 60% finalized within 24 hours using WASPLab<sup>®</sup> with PhenoMATRIX<sup>®</sup> (Figure 1).

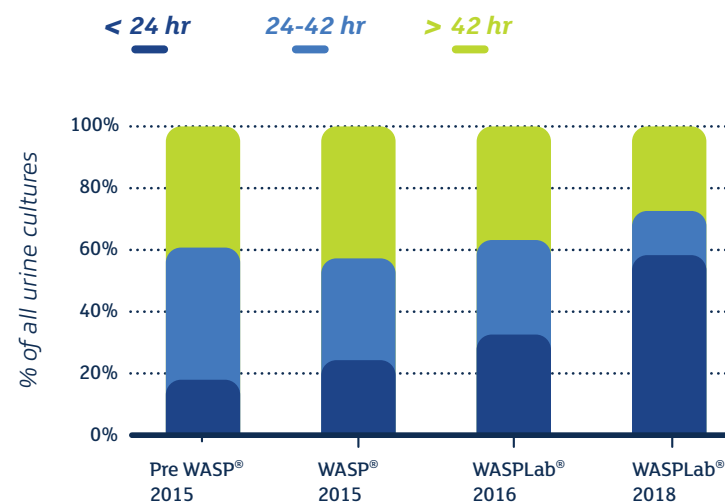
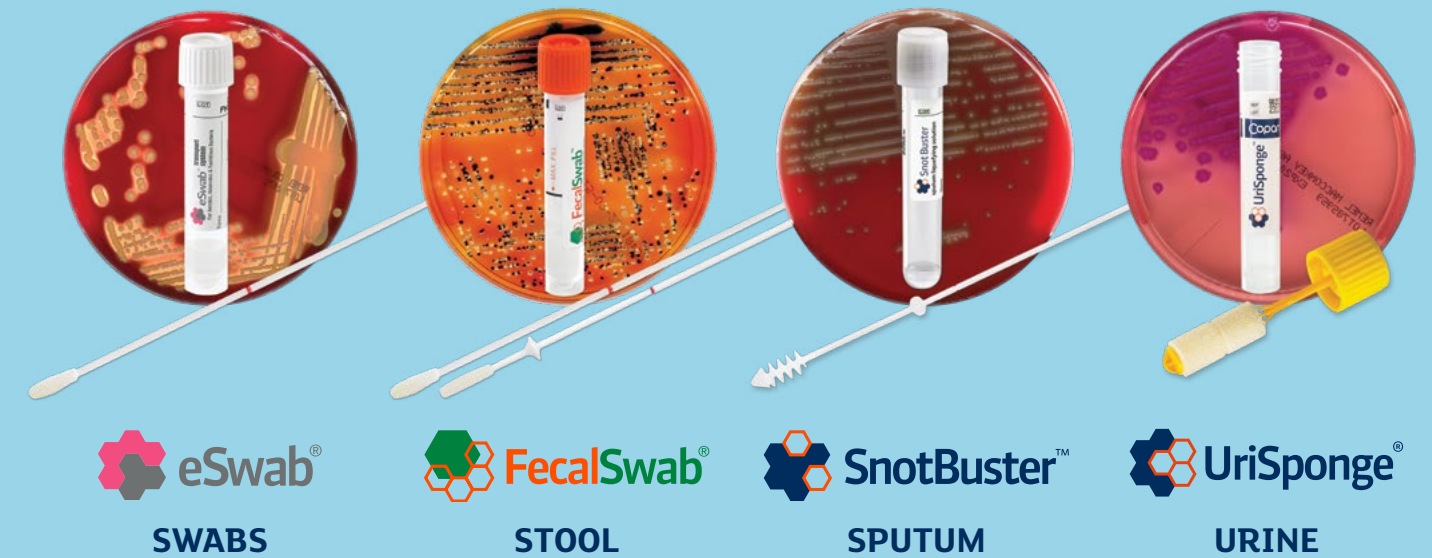


Figure 1: TAT frequency distribution with WASP<sup>®</sup> and Full Lab Automation

## A Liquid Solution for Microbiology Samples

# Full Laboratory Automation Begins with the Sample



## Maximize Your Automation Investment

Developed by Copan in 2006, Liquid Based Microbiology (LBM) combines state-of-the-art flocked swabs with media, transforming challenging samples into easy-to-process, multi-purpose liquid samples which are easily processed on WASP<sup>®</sup> Walk-Away Specimen Processor.

WASP<sup>®</sup> requires no manual intervention for specimen processing procedures. While non-liquid samples or traditional swabs can be managed using streak only function, Copan recommends Liquid Based Microbiology (LBM) product line to maximize your automation investment.

**Ready to make the switch to better Microbiology with LBM?** Copan can help with change management, workflow analysis, verification guidance and training.



# Copan Full Laboratory Automation

WASPLab®  
*Digital Microbiology*

Radian®  
*Automated Kirby Bauer  
Set up and Interpretation*

PhenoMATRIX®  
*AI Enhanced Software for  
Clinical Microbiology*

Colibri™  
*Fully Automated  
Sample Workup*

WASP®  
*Walk-Away Specimen Processor*

WASP-FLO™  
*Bulk Specimen Sorting*





# Automated Specimen Processor

[Learn More](#)



**WASP®** **ALLOWS THE REASSIGNMENT OF VALUABLE LABORATORY STAFF** without compromising the quality of Microbiology cultures. The system is designed to mimic a technologist, utilizing best practices for planting and streaking for every patient specimen.<sup>3</sup>

### Standardized, High Quality Planting and Streaking



Image analysis check confirms inoculum in loop



Automatically selects appropriate loop size (1µl, 10µl or 30µl)



Available loop sterilization between quadrants, for optimal colony isolation

### Modular, Open Platform for Complete Specimen Processing Automation

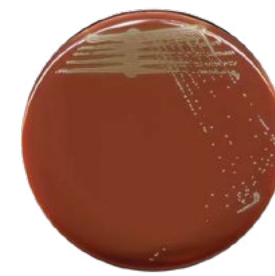
- Ensure traceability with automated labeling and barcode reading
- Minimizes reliance on consumables, reducing waste and associated costs
- Scalable system adapts to any laboratory size and workflow



### Upfront Specimen Processing

### Automation with Proven Scientific Techniques

WASP® follows the Manual of Clinical Microbiology and Clinical & Laboratory Standards Institute (CLSI) recommendation to use 1µL to process routine urine specimens.



Plates inoculated using Copan WASP® 1 µl loop<sup>4</sup>



Plates inoculated using competitor automated specimen processor, 10 µl pipette<sup>4</sup>

### Minimize Operational Costs



WASP® uses reusable metal loops reducing operational and waste disposal costs.



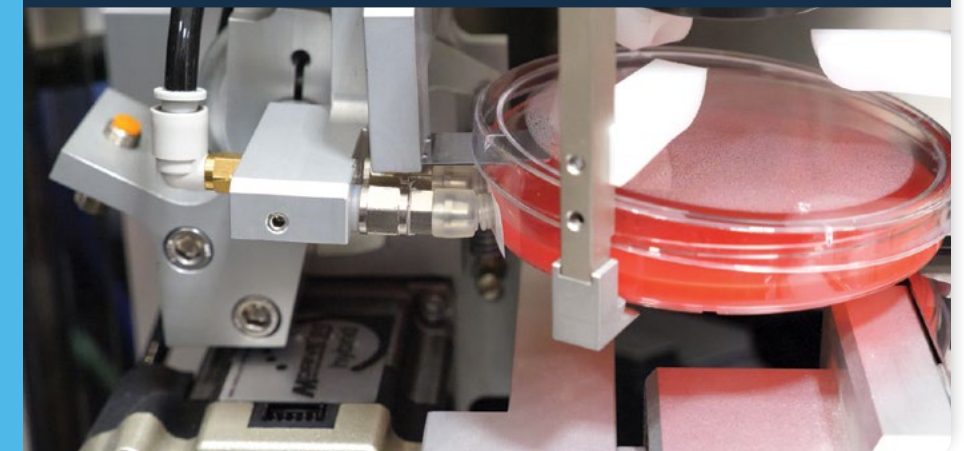
Fully electric system eliminates the need for a compressor and/or additional utility costs.



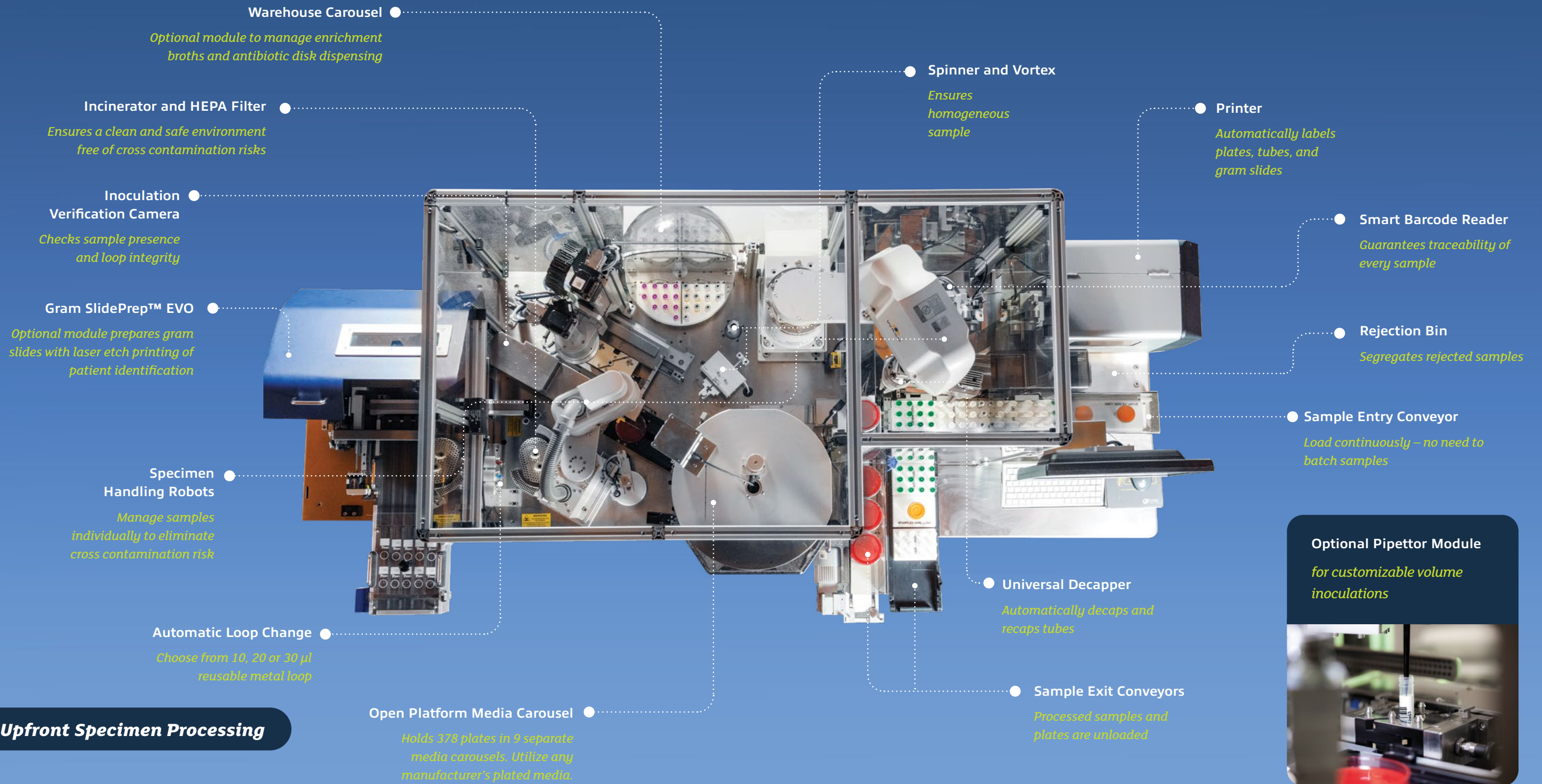
Open platform accommodates any manufacturers' media, allowing users a choice in their culture plates.

### Barcode Driven System Improves Specimen Traceability

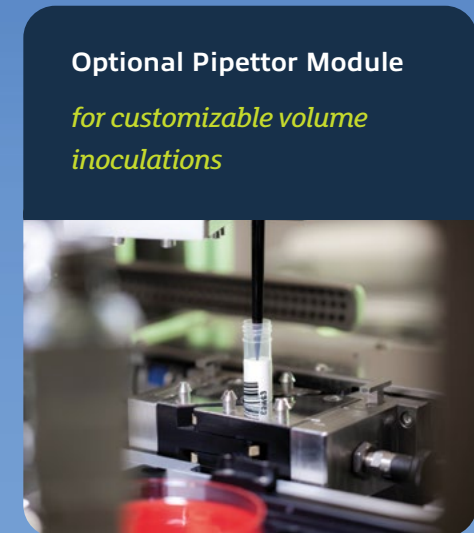
- Smart 360° scan technology reads specimen barcode labels anywhere on the container.
- Multiple labels and barcode languages on a single tube can be differentiated, discerned and read by the software.
- Labels completed plates, Gram slides, and inoculation tubes are reconciled to the patient specimen barcode.



# WASP®: Walk-Away Specimen Processor



## Upfront Specimen Processing





# Digital Microbiology

Learn More



**WASPLAB® IS A HIGHLY EFFICIENT, MODULAR, SCALABLE AND CUSTOMIZABLE SPECIMEN PROCESSING AND CULTURE WORK-UP SYSTEM FOR CLINICAL MICROBIOLOGY.** Samples move from front-end processing, to Smart Incubation, Digital Microbiology and Artificial Intelligence and Interpretive Algorithms for plate reading.†



Full Laboratory Automation

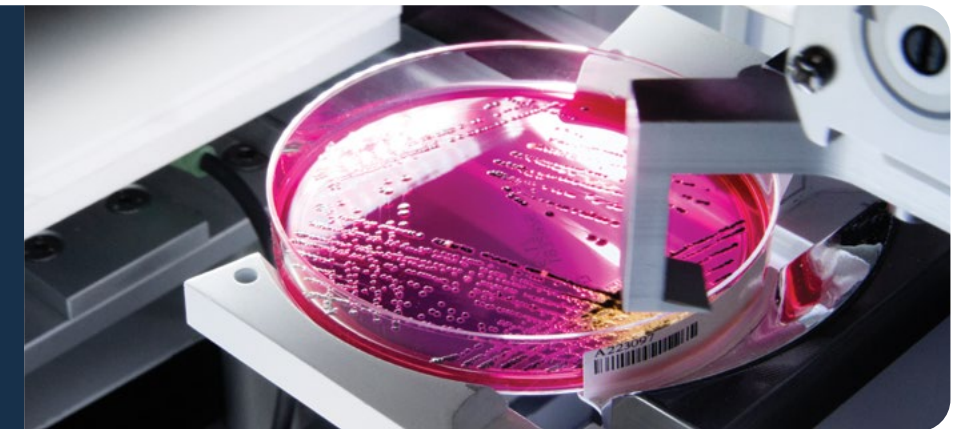
### From Plate Image to Interpretation

- Standardize optimal incubation conditions for better and faster results\* 5-10
- Improve laboratory productivity and quality through automated culture sorting and automated recognition of some common clinical bacterial isolates<sup>1,6,7</sup>
- Modular, scalable, and adapts to every workflow<sup>11,12</sup>

\* Based on user experiences. Varies based on validation and user preference.

### Image Acquisition System<sup>b</sup>

*A sophisticated lighting and camera system acquires the image of each plate clearly and accurately.*



>1000

Lighting combinations

1600 pixel/mm

Resolution

9 mm

Depth of field

24 BIT

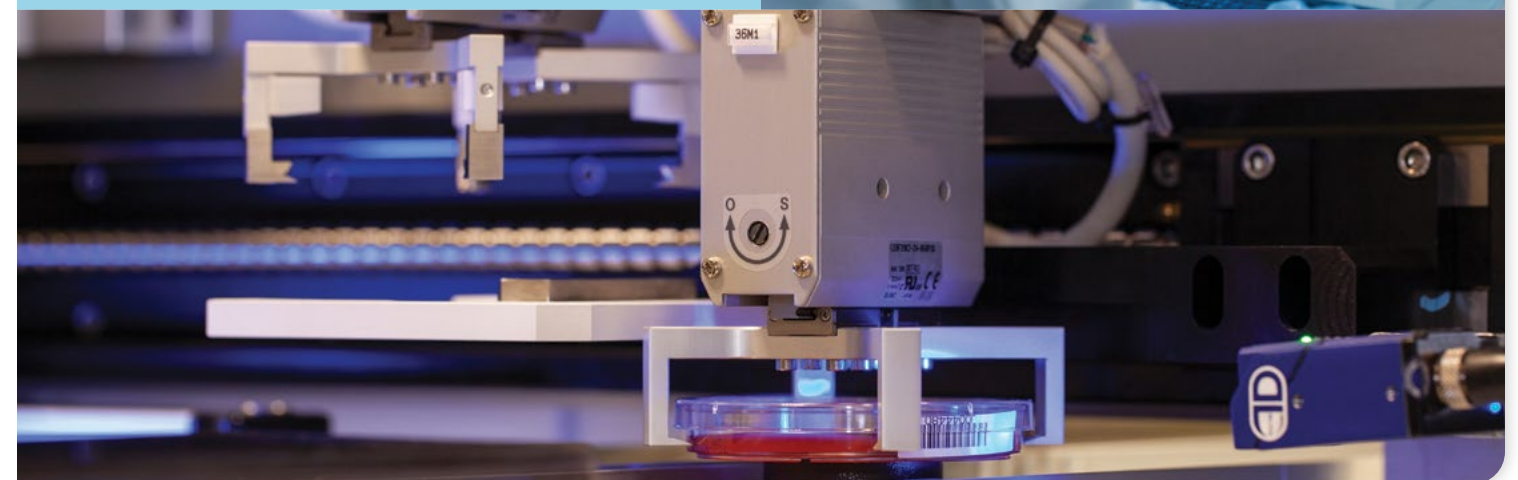
Color depth

48MP

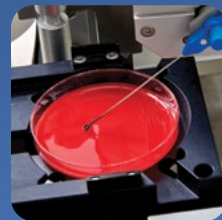
RGB telecentric Trilinear camera

### User Interface Centralizes Laboratory Workflow

The WASPLab® user interface is designed as the main access point to all laboratory tasks, ensuring an easy and user-friendly interaction.



# WASPLab®: Technology Leader in Full Laboratory Automation and Digital Microbiology

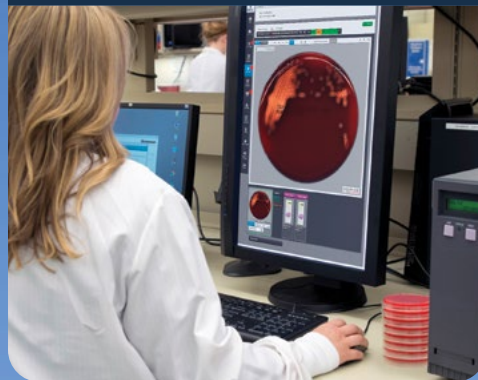


## WASP® Walk Away Specimen Processor

Open platform, modular instrument addressing all aspects of specimen set up

## Workstations

Plate management for screening, reading, and picking



## Incubators

Available with O<sub>2</sub> or CO<sub>2</sub>, double or single incubators

## Robotic Incubation and Storage

Dual robot system efficiently loads plates media side down onto individual shelves ensuring uninterrupted, homogeneous incubation conditions



## Offline Carousel

Allows user to manually load plates that have been manually processed onto the system



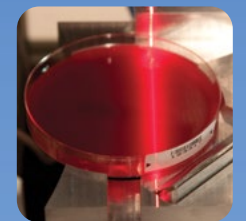
## Endline Canister System

Plates are automatically sent to removable canisters or can be directed to an end-line disposal bin



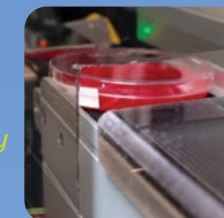
## Image Acquisition

Telecentric camera acquires 48 megapixel image with multiple lighting combinations to optimize image quality depending on media type



## Conveyor System

Customizable conveyors move plates from upfront processing to full laboratory automation

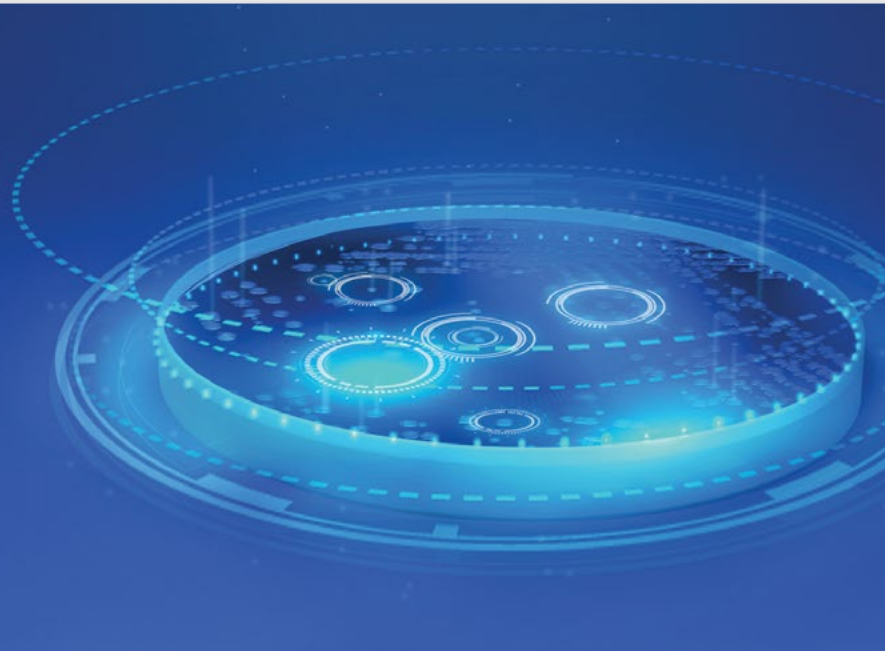


**Full Laboratory Automation**

# PhenoMATRIX®

## Artificial Intelligence for Microbiology

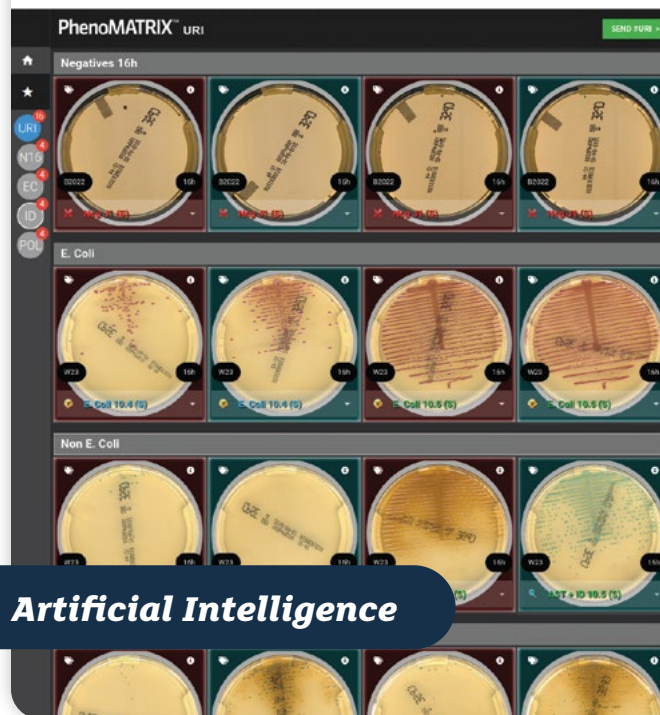
Learn More



**UNPARALLELED IN THE INDUSTRY**, PhenoMATRIX® is FDA 510(k)-cleared software that uses artificial intelligence, combined with patient information from the Laboratory Information System (LIS) and laboratory-defined expert rules, to automatically sort digital images of culture media plates and assist technologists with final assessment and result definition.<sup>†, 13-15</sup>



PhenoMATRIX® is now FDA 510(k) cleared (K251511) as a Class II Device, marking a significant milestone in digital microbiology innovation.



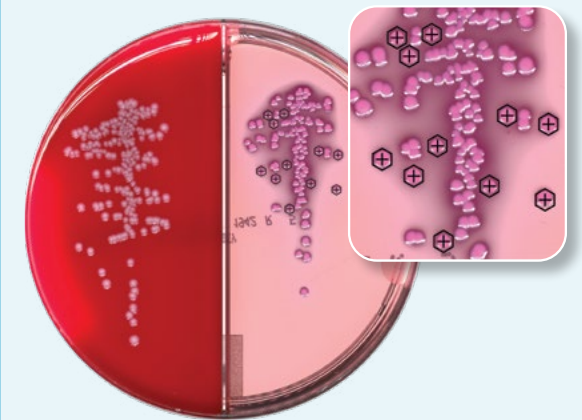
Artificial Intelligence

### Streamline Culture Analysis and Reporting

- Create custom filters to group plates in a folder-style interface, based on the laboratory rules and LIS Data.<sup>16</sup>
- Plates are grouped by colony count –no growth, growth, mixed growth, etc. according to laboratory workup needs.
- Laboratory technologists can review all images and, following laboratory protocols, can efficiently report grouped negative and positive results directly to the LIS with a simple click.<sup>6, 14-17</sup>

### PhenoMATRIX® and Colibri™

Colibri™ is a fully automated instrument that prepares colonies for MALDI ID and susceptibility testing. This instrument integrates seamlessly with PhenoMATRIX®, which analyzes the digital plate, “tags” significant colonies for picking, and communicates the colony coordinates to the Colibri™ for reliable, accurate picking.\*<sup>8-20</sup>



### PhenoMATRIX® ESSENTIALS

**FDA-cleared AI-driven analysis for 1–2 plate urine culture workflows, supporting whole-plate and bi-plate formats.**

- Colony Counting and Plate Segregation
- Colony Morphology Recognition
- Presumptive Identification with Chromogenic Media
- Expert Rules and LIS Data Integration

### PhenoMATRIX® SELECT

**Includes all FDA-cleared PhenoMATRIX® Essentials capabilities and adds additional FDA-cleared protocols.**

- Beta-Hemolysis Detection
- Expanded Specimen Protocols
- Targeted Growth Detection

### Additional Software Modules (Research Use Only)

#### PhenoMATRIX® TAG

- Applies laboratory-defined rules to identify and assign colonies for downstream workup
- Enables communication with Colibri™ instrument for automated colony picking (ID/AST)
- Includes all PhenoMATRIX® Select capabilities with support for enhanced protocols
- *Colibri™ instrument not included*
- *PhenoMATRIX® Plus not included*

#### PhenoMATRIX® PLUS with Auto-Release

- Applies laboratory-defined rules to identify culture plates and transmit results to the LIS
- Includes all PhenoMATRIX® Select capabilities with support for enhanced protocols
- 10 plates included; additional plates available for purchase
- *PhenoMATRIX® TAG not included*

*Research Use Only (RUO) in the United States; not FDA-cleared for clinical diagnostic use.*

*Regulatory status and availability of applications, protocols, and plate types may vary by country. Additional capabilities beyond those described here may be available but not included in FDA-cleared claims in the United States. Please contact your local Copan representative or authorized distributor for more information.*



# Automated Specimen Workup

Learn More



## Simplified, Automated Prep for MALDI and AST

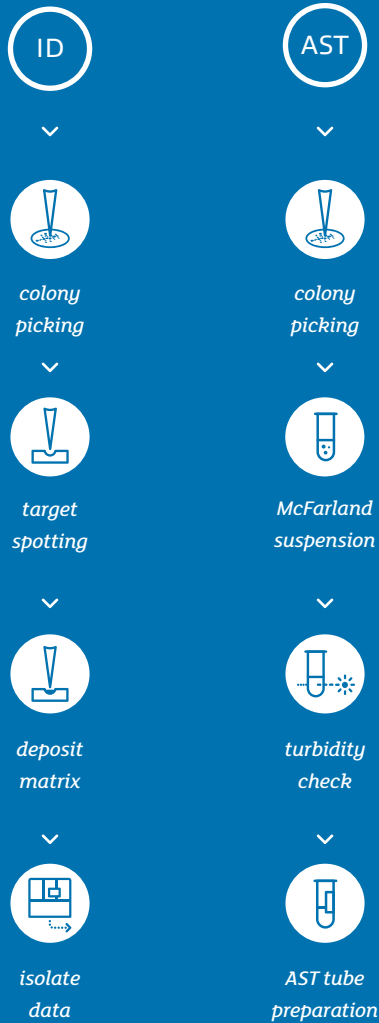
The instrument spots targets for microbial identification through MALDI-TOF technology and prepares microbial suspensions for Antibiotic Susceptibility Testing (AST).<sup>21-24</sup>



Colibri™ is the first instrument in its class to receive 510(k) clearance for the preparation of MALDI-TOF slides and McFarland AST suspensions.<sup>25, 26</sup>

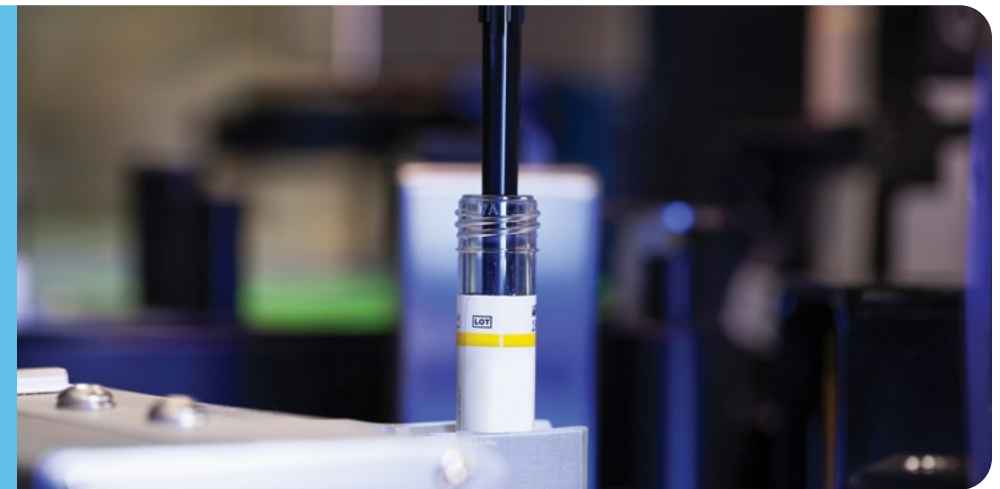


Automated Specimen Workup



## Accurate Pipetting

Synchronization of nephelometer and pipettor to maximize standardization and ensure the highest precision.

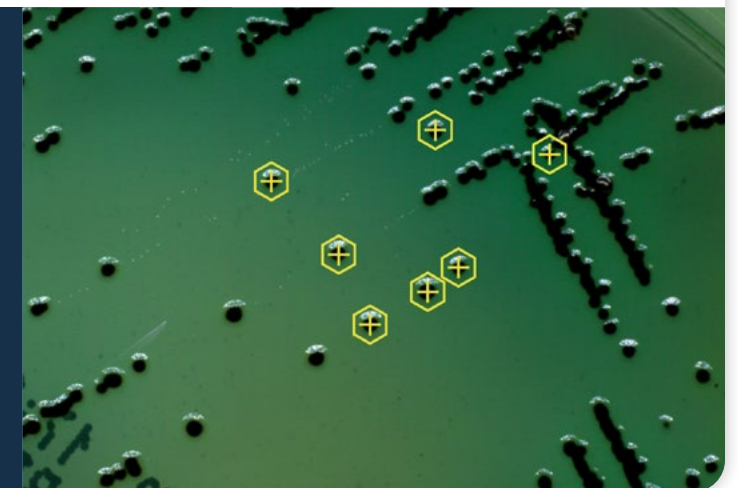


## Automating Steps in Microbiology Testing for Time and Labor Savings

- Robotic pipettor**  
 Handles both colony picking and liquid transfer with precision<sup>a</sup>
- Containers table**  
 Holds up to 16 target McFarland suspension tubes and AST tubes for preparation of microbial suspension<sup>a</sup>
- Onboard Nephelometer**  
 Checks turbidity of the microbial suspension to guarantee precision and standardization
- Printer and barcode system**  
 Automatically labels tubes and purity plates for traceability and label reconciliation
- Vision system**  
 Controls pipette alignment and retrieves the colony coordinates from WASPLab®, matching them for accurate picking

## Direct communication with WASPLab® and PhenoMATRIX®

The automation software highlights isolated colonies and aggregated ones with different colors. PhenoMATRIX® TAG selects the optimal colonies communicating the coordinates with Colibri™ for a reliable picking.<sup>\* 18</sup>



\*Product labeled for Research Use Only (RUO) in the United States. Availability and regulatory status may vary by country.



## Automated AST

Learn More



### Radian® Expert System

A flexible, customizable, and user-friendly platform to interpret sensitive, intermediate, or resistant results. Digital interpretations are made with the specialized imaging capabilities in combination with Halo Recognition Algorithms used by Radian® Expert System.

#### Expert system

Keep everything in sight while working directly on the plate

#### Halo-reading interface

With direct communication to the rules database

#### Rule editor

Adapt or completely customize your own interpretation rules

**RADIAN® IS A FULLY INTEGRATED WASPLAB® MODULE** that automates the seeding of Mueller Hinton plates, application of antibiotic discs, robotic transfer of prepared plates to incubators, plate imaging, zone measurement, zone interpretation, and result output using the Halo Recognition Algorithms, which are part of the Radian® Expert System AI.<sup>28-34</sup>

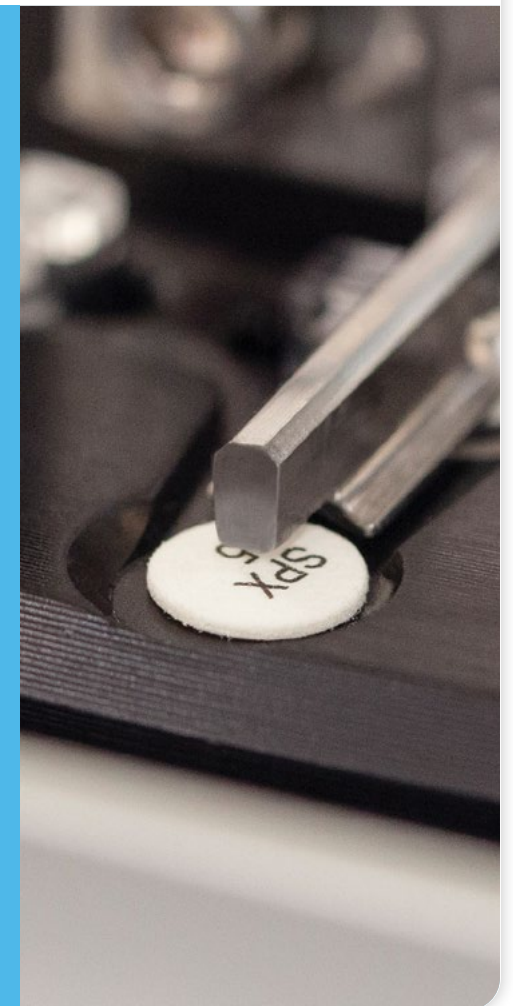
### Increase Productivity, Decrease Operational Cost

- Streamline AST workflow using automation and AI for standardization, labor savings, and improved turnaround time<sup>32, 33</sup>
- When validated by the laboratory, Radian® has the potential of early susceptibility reading, allowing for more timely results<sup>27-30, 35</sup>
- Automatically applies CLSI guidelines for use with direct blood culture AST<sup>33, 34, d</sup>

Automated AST

### Radian® In-Line Carousel

- Parallel redirection line**  
The Radian® module sits along the WASPLab® track, easily ingrating AST tasks into the laboratory workflow
- 50 cartridge carousel**  
Ensures maximum flexibility in choosing antibiotic discs
- Dual HEPA filtering system**  
High-capacity antimicrobial carousel allows the system to randomly select from up to 50 antibiotics for protocols using up to 8 discs per 100mm plate.
- Quality check**  
Dedicated vision system assures the disk has dispensed from the cartridge. The system also checks that the disk matches the selected protocol.





# Moving Microbiology

Learn More



## Workflow Efficiency

- o **Dual SCARA robots**  
The Pick-and-Place robots sort tubes in RFID-driven pallets and unload completed samples onto dedicated racks
- o **Hopper module**  
Holds up to 600 samples per batch
- o **Completed specimen output**  
Holds 792 samples divided into eight output racks
- o **Manual specimen loading**  
Includes four columns composed of eleven RFID pallets
- o **Manual user interface**  
Backup manual loading system for special containers



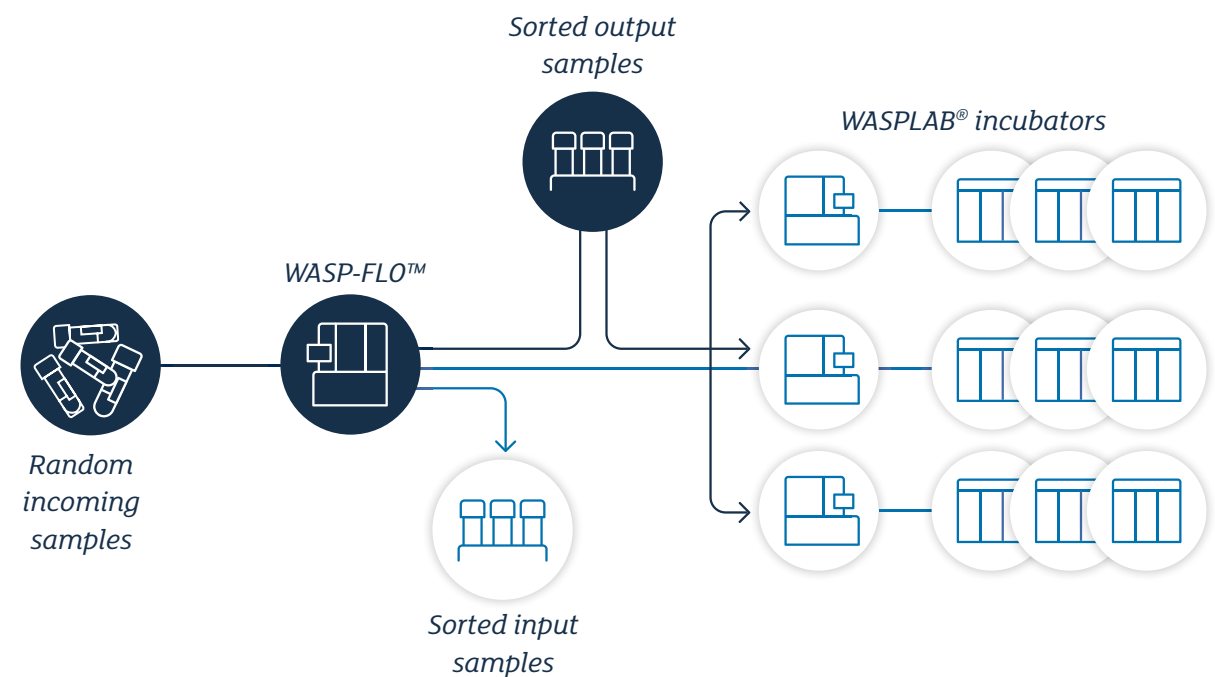
WASP-FLO™ IS FOR MICROBIOLOGY LABORATORIES with multiple WASPLab® lines, to streamline sample loading and unloading. WASP-FLO™ automatically sorts samples<sup>a</sup>, drives them to the appropriate WASP®, and batches the tubes in output racks after processing.



## Streamline Sample Loading

- o Optimizes sample management with real time evaluation of the workload
- o Boosts laboratory productivity by automatically sorting and routing samples
- o Data management system monitors the path of each sample for full traceability

## Workflow example



Bulk Specimen Sorter

## Return on Investment

# Administrative and Financial Considerations

**THE RETURN ON INVESTMENT (ROI)** for automation will differ for each laboratory. Sample volume, sample types, operating and peak hours and future growth goals will all impact the final analysis.

### Factors to Consider



Total specimen volume for bacteriology samples that are manually plated



What times during the day do specimens arrive in the lab?



Planting protocols, the amount and types of plates inoculated per specimen type; bi-plate versus whole plate; incubation parameters (O<sub>2</sub> or CO<sub>2</sub> etc)



How many full-time equivalent (FTE's) are needed to process the specimens arriving into the lab?



Staffing schedules

### Example Time Savings with Automation and AI

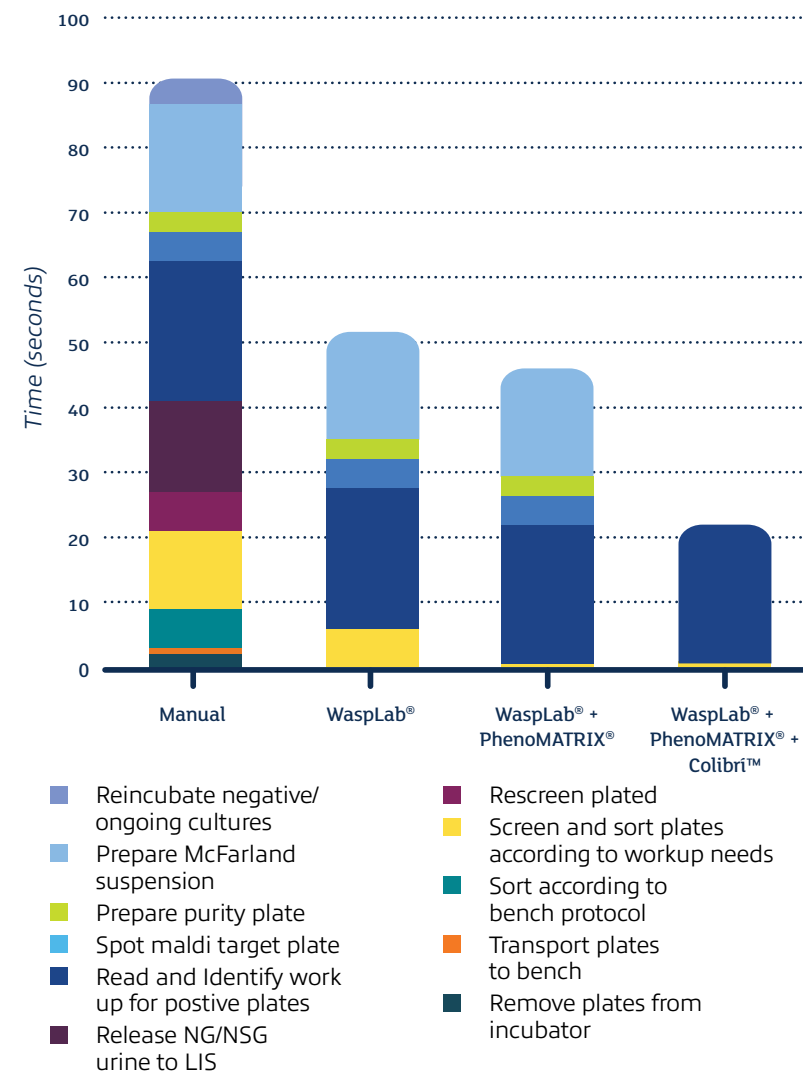


Figure 2: FTE hands-on time savings associated with automation, based on a singular urine culture and using average times from customer data collected by Copan at over 100 U.S. and Canadian laboratories

### Beyond the ROI: Additional Automation Considerations

#### o FTE Reallocation

Is there potential to expand the scope of the lab testing by automating the upfront processing? For example, can trained lab technicians perform more molecular testing or can the lab increase volume of routine testing?

#### o New Business

Can the lab receive more business from outreach clients if they adopt state-of-the-art technology such as automation, digital microbiology, and automatic plate reading?

#### o Recruiting and Retention

Could automation allow the lab to recruit employees more readily or retain employees in this competitive market? Consider employee engagement, removal of the repetitive non-value added tasks like manual planting and streaking.

#### o Turnaround Time

Added efficiencies of incubation, reading, set-up and reporting with automation can all contribute to faster turnaround time to results.

Can faster turnaround time help to shorten hospital stays and improve antibiotic stewardship?

#### o Cost of Quality

How much rework must happen in your lab? Can savings be realized by having more consistent and reproducible specimen preparation?

### The Laboratory Workforce is Shrinking

It is widely known that the laboratories across the world are struggling to fill open vacancies in the laboratory. Laboratories face an aging population of laboratory personnel that will soon retire, a decrease in the number of graduates from laboratory educational programs and increase in testing volumes.<sup>36</sup>

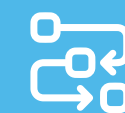
### Automation and AI Can Help Laboratories Manage Current Challenges



Streamline Routine Tasks



Improve Efficiency and Accuracy



Optimize Workflow



Training and Education



Preserve Institutional Knowledge

# Product Specifications

## WASP®

Dimensions:	43.5 inches wide x 81.5 inches long x 76 inches high
Weight:	Approximately 1,300 lbs
Input Voltage:	220V, 20Amps
Network Ethernet:	100 MB
Interface:	LIS interface available upon request
Peripherals:	Touch screen monitor, external barcode reader, label printer
Certifications:	CE, UL, CSA
Electrical Receptacle Plug:	HBL2321 250V / 20A (for USA and Canada)

## GRAM SLIDEPREP™ EVO

Dimensions:	28 inches wide x 23 inches long x 49.5 inches high
Weight:	Approximately 221 lbs

## INCUBATORS

Dimensions Single:	45.1 inches wide x 33.7 inches long x 91.1 inches high
Dimensions Double:	68.5 inches wide x 33.7 inches long x 91.1 inches high
Weight:	Approximately 1,000 lbs (Single) Approximately 2,000 lbs (Double)
Input Voltage:	220V, 20Amps
Atmospheric Conditions:	CO <sub>2</sub> and Aerobic
Capacity Single:	795 plates
Capacity Double:	1,590 plates
Electrical Receptacle Plug:	HBL2321 250V / 20A (for USA and Canada)

## COLIBRÍ™

Dimensions:	39.2 inches wide x 78 inches long x 75.2 inches high
Weight:	Approximately 1,700 lbs (according to the configuration)
Power Supply:	208-240 VAC~50/60 Hz, 1500 W max (peak)
Minimum Differential:	Magneto thermic differential switch D-16A 300mA
Connection:	Interlocked plug like IEC 60306 or NEMA L6-20P
Remote Control:	Ethernet 100Mb
Environmental Working Conditions:	15 °C-32 °C, 30%-60% Humidity
Thermal Output:	4760 Btu/1.4 Kw
Noise Emission:	Max 67.4 dB
Connected Peripherals:	Touch Screen, Mouse, Keyboard, Printer, 2XBarcode, Readers, Vision System

## WASP-FLO™

Dimensions:	Hopper module: 39.1 inches wide x 45.2 inches long x 67 inches high Loading module: 89.3 inches wide x 69.2 inches long x 81.4 inches high Conveyor: According to specific layout
Weight:	Hopper module: Approximately 855 lbs Loading module: Approximately 2165 lbs Conveyor: Weight variable according to layout, approx 100 kg/m per single conveyor
Electrical Specifications:	208-240 VAC, 50/60 Hz, 2000 W max (800 W WASP-FLO Loading Module+ 1200 W WASP-FLO Conveyor)

## OPERATING CONDITIONS

Height:	Up to 78.7 inches
Humidity:	From 0 to 95%
Temperature Range:	From 5 °C to 40 °C

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