

mPrepTM ASPTM



AUTOMATED SPECIMEN PROCESSING

Walk-away preparation for TEM, vEM, and SEM
to support advanced research and
clinical electron microscopy workflows.

We've Come a Long Way from Conventional Electron Microscopy Specimen Prep Workflows

The mPrep System is purpose built to streamline electron microscopy specimen preparation by combining automated processing, microfluidics and intelligent specimen handling.

❌ Labor intensive

✔ Load and go

❌ Highly manual

✔ Automated workflow

❌ Time consuming

✔ Hours instead of days

❌ Manual variability

✔ Automated reproducibility

❌ Prolonged exposure to toxic chemicals

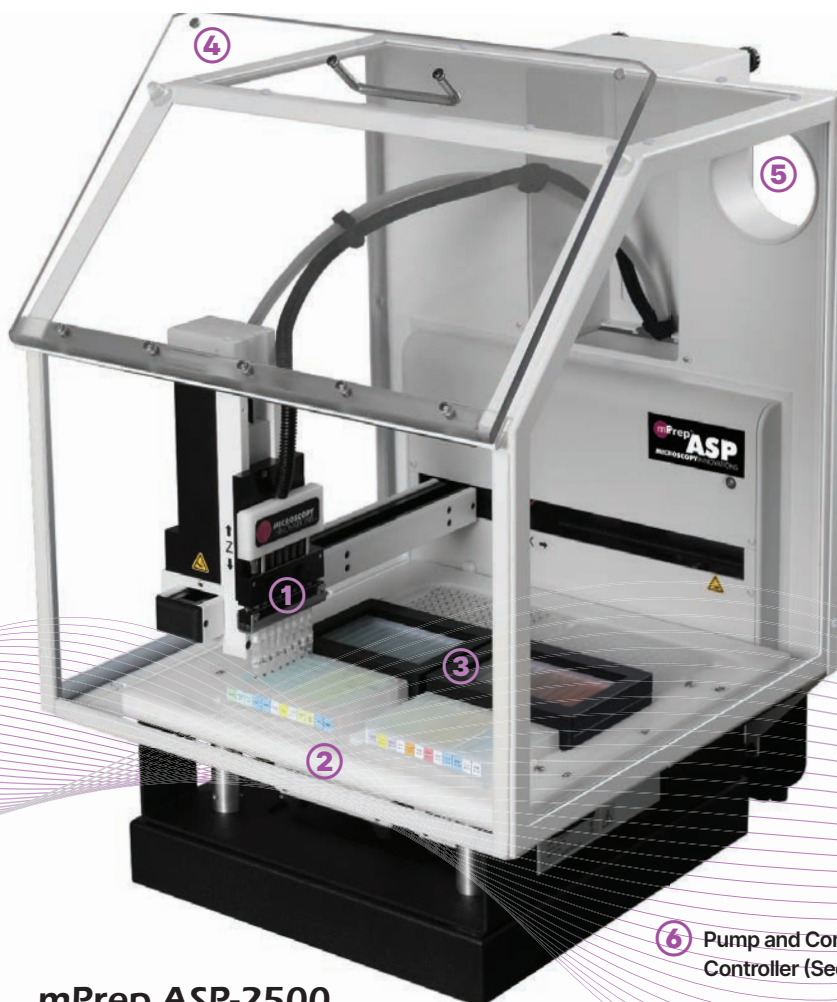
✔ Greatly improved safety

❌ Dependent on technician expertise & training

✔ Operator independent

PURPOSE-BUILT

Automation for Electron Microscopy Specimen Prep Workflows



mPrep ASP-2500 Automated Specimen Processor

❶ 8-Channel head offers flexibility to simultaneously process as many as 128 specimens — or as few as 1 — in mPrep capsules.

❷ ASP deck holds 6 plates—for up to 72 reagent steps without changing plates. Reagents are loaded into standard 96- or 12-well microplates for easy reagent setup and cleanup.

❸ Heating and cooling (0-100°C) of 2 independent reagent plate positions. (ASP-2500 only)

❹ Integrated fume enclosure with easy-open front door protects technicians from toxic chemicals.

❺ Enclosure vents externally to fume hood or facility fume system. ASP also can be installed in fume hoods.

❻ External pump provides precise reagent delivery and microfluidic agitation to drive reagent infiltration while minimizing consumption and waste. Dedicated Windows laptop controls the ASP with your preprogrammed protocols for ultimate processing consistency and reproducibility.

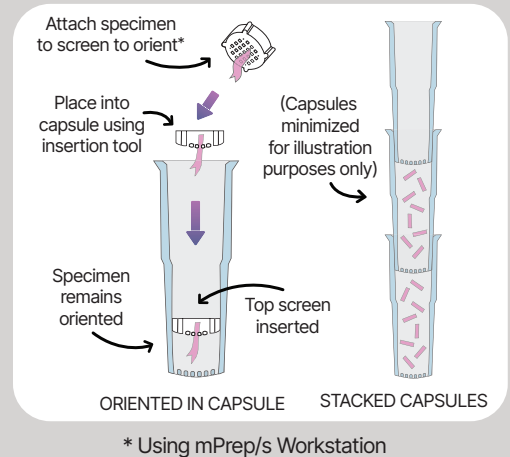
At the core of the mPrep system are patented mPrep capsules, which securely hold specimens throughout processing to minimize handling, reduce the risk of damage, and improve workflow consistency.

The mPrep System sets up laboratories to run efficiently, deliver more reproducible results, increase safety with minimized exposure to toxic reagents, and save on cost per run. Together, the mPrep ASP and mPrep capsules deliver a standardized, scalable approach to high-quality EM specimen preparation.

mPrep/s Capsules



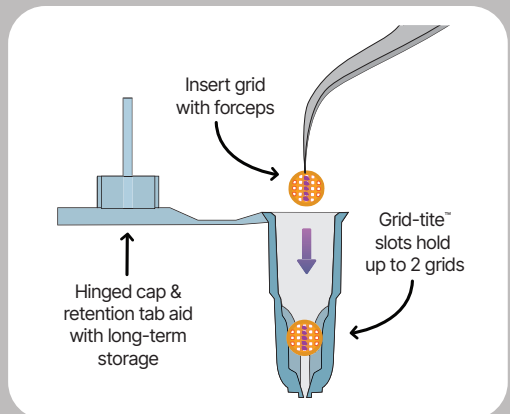
- Uses adjustable, insertable screen to entrap or precisely orient specimen.
- Processes multiple specimens (1-128 per run) in stacked capsules for high throughput.
- Protects specimens from loss or damage during processing.
- Keeps specimens immersed in reagent for complete processing.
- Directs reagents through dozens of 300 μm channels in capsule bottom to provide parallel microfluidic flow.



mPrep/g Capsules



- Processes 1 or 2 grids per capsule (1-16 grids per run) concurrently for efficiency and consistency across specimens.
- Reduces direct grid touches and protects grids from loss or damage.
- Keeps grids immersed in reagent for complete processing.
- Can be stacked for higher production.



WALK-AWAY
AUTOMATED
SPECIMEN PREP



ONE-TOUCH
SPECIMEN
HANDLING



FASTER
SPECIMEN
PROCESSING



INDEPENDENT
HEATING / COOLING
0 - 100°C



PREPARE MULTIPLE
SPECIMENS
IN PARALLEL

PROVEN TECHNOLOGY.

REDUCED HANDS-ON TIME

Resin infiltration can be completed entirely within mPrep capsules, eliminating specimen transfers and dramatically reducing resin handling and cleanup.

INCREASED LAB PRODUCTIVITY

The mPrep ASP's automated EM specimen processing provides true walkaway operation so your team can focus on higher-value work. Automated notifications alert you when user interaction is required.

CONSISTENCY & CONTROL

During installation, the ASP is programmed with your lab's protocols, ready to run again and again for consistency across samples, batches, and technicians.

REDUCED COSTS

Reduced time at the bench, reduced volume of reagents, and faster processing times result in greater lab efficiencies and reduced overall costs.

EASY INTERFACE

The software's easy-to-use interface makes it straightforward to develop or modify protocols, or share with other ASP user sites.

MINIMAL TRAINING

With automation at its core, the ASP requires little training for lab personnel, thus eliminating technician-to-technician variability to ensure high quality, reproducible results.

Published Results.

“ASP and mPrep capsules are adaptable to a wide range of vEM, TEM, and SEM applications. The capsules and ASP automation improves research throughput, reduces staff effort, cuts toxic reagent consumption and handling, and enhances research reproducibility to more efficiently advance biomedical and clinical science.”

— Oregon Health & Science University
<https://tinyurl.com/OHSUcore>

“The Core automates specimen prep with the mPrep ASP ... to provide repeatability, speed, minimize reagent consumption, cut hands-on effort, and provide reproducibility for reliable feature identification and AI segmentation.”

— 3DEM Ultrastructural Imaging Core, Cleveland Clinic
<https://tinyurl.com/LernerInstitute>

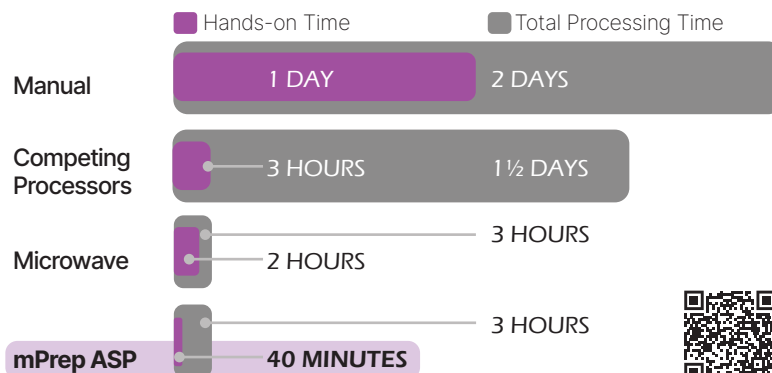
“By moving the sample processing protocol to an automated platform, we have shortened the overall processing time by two days. We have traded almost five days of specialist time manually pipetting at the bench for one half day of plate preparation and sample loading, enabling specialists to concentrate on other tasks while the robot works at all hours of the day.”

— Stowers Institute for Medical Research
<https://tinyurl.com/StowersCore>

UNRIVALED SPEED

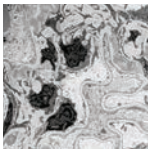
The ASP's unique, continuous, directed agitation speeds reagent infiltration to dramatically cut processing times, thus providing faster results.

(Right) Hands-on time comparison for typical TEM specimen preparation. Based on typical ranges observed in microscopy laboratories. Estimates based on publicly available protocols. Scan QR code for details.



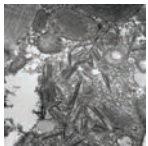
ONE PLATFORM

Multiple Applications



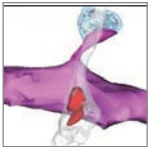
CLINICAL BIOPSIES

Simultaneous preparation of 1 to 128 specimens with consistency and speed.



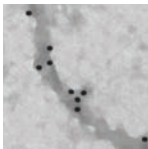
RESEARCH TEM

Rapid preparation of tissues and other biological specimens in hours instead of days.



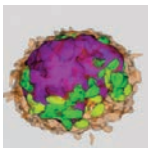
VOLUME EM

Reproducible and rapid automated volume EM (vEM) preparation with one-tenth the hands-on time.



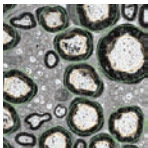
IMMUNOGOLD LABELING

Automated pre-embedding and automated on-grid immunogold labeling with minimal reagent consumption.



CELLS & SMALL SPECIMENS

Preparation of cells, spheroids, organoids, cilia and other small specimens, using enrobing, for TEM and vEM.



SEM, XRM & MORE

Creative specimen preparation for a wide range of microscopy applications. Contact us for more information.

Accelerating Specimen Preparation Without Sacrificing Quality

The ASP decreases total processing time, up to 10-fold depending on the tissue and application, with no reduction in specimen preparation quality. The ASP's continuous, directed reagent agitation, rapid reagent exchanges, and low carryover greatly accelerate infiltration of all reagents, even 100% resin, compared to other processing methods.

[†] Up to 8 patient specimens, each consisting of 1-8 biopsy segments (18 Ga, max 3 mm long)

* Scan QR code for protocol details



SPECIMENS (# of samples)	PROTOCOLS *	ASP	MANUAL METHODS
Kidney (8)	TEM: Fix rinse, Os, epoxy infiltration	46 mins	8 - 36 hrs
Kidney clinical biopsies (8-64) [†]	TEM: Fix rinse, Os, UA, epoxy infiltration	180 mins	24 - 36 hrs
Liver, muscle, heart, brain (8)	TEM: Fix rinse, Os, epoxy infiltration	132 mins	24 - 36 hrs
Flatworm (8)	TEM: Fix rinse, Os, epoxy infiltration & curing	8 hrs	5 - 7 days
Brain, heart, liver (8)	vEM: Fix rinse, TA, Os-KFeCN, TCH, Os, UA, Pb, epoxy infiltration	8 hrs	4 - 5 days
Breast tumors (8)	vEM: Fix rinse, Os-KFeCN, TCH, Os, UA, Pb, epoxy infiltration	5 hrs	20 hrs
Flatworm (8)	vEM: Fix rinse, Os-KFeCN, TCH, Os, UA, Pb, epoxy infiltration & curing	2 days	5 days

CONSISTENT
EVERY RUN.

REPRODUCIBLE
BATCH-TO-BATCH.

EM WORKFLOWS MADE SIMPLE



- 1** **Select a protocol** preprogrammed to your lab's validated procedures



- 2** **Load reagents** into microwell plates or 12-column reservoirs and place on the ASP deck



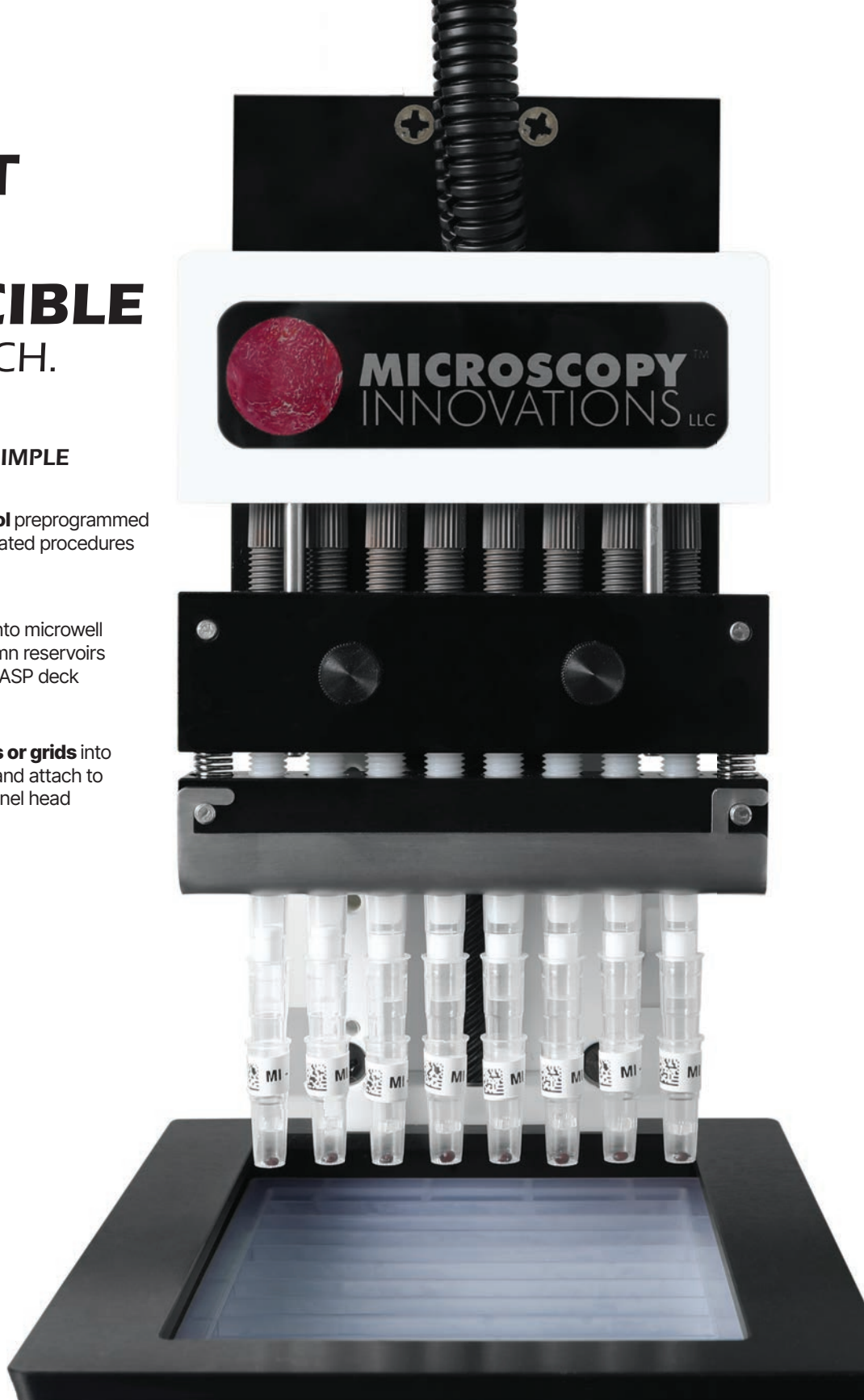
- 3** **Load specimens or grids** into mPrep capsules and attach to the ASP's 8-channel head



- 4** **Press START**



- 5** **Walk away**



**Laboratory
& Workflow
Impact**

UP TO
128
TEM SPECIMENS
SIMULTANEOUSLY

TYPICALLY
90%
REDUCTION IN
HANDS-ON TIME

1-8
SIMULTANEOUS
WORKFLOWS

UP TO
10-FOLD
DECREASE
IN PROCESS TIME

UP TO
90%
REDUCED REAGENT
CONSUMPTION

Ordering

PRODUCT	CAT. NO.	PRODUCT	CAT. NO.
MPREP ASP SYSTEM & ACCESSORIES		REAGENT RESERVOIR PLATES & SEALS	
mPrep ASP-2500 Automated Specimen Processor	41125	12-col reagent reservoir plates, PP	1 52501
mPrep ASP-1500 Automated Specimen Processor	41015		5 52503
mPrep/bench™ 96-well silicone rack	34000		25 52502
mPrep/f30™ Standard Filter Couplers, 16/pk	31500	96-well reagent plates, square well, PP, 1.2 ml	10 51010
MPREP/S (SPECIMEN) CAPSULES & ACCESSORIES			100 51011
mPrep/s Capsules with screens, 24/pk	22405	96-well reagent plates, PP, 500 µL	10 51001
mPrep/s Capsules with screens, 96/bag	22505	X-Pierce™ plate seal sheets	100 53010
mPrep/s Capsules without screens, 96/bag	22550	Self-adhesive pierceable foil plate seal sheets	100 53050
mPrep/s Insertion Tool	32010	Pierce Seal, pierceable foil heat seal sheets	100 53070
mPrep/s Workstation, complete	42100	ADDITIONAL ITEMS	
MPREP/G (GRID) CAPSULES		Service Agreement	
mPrep/g Capsules, 16/pk	21305	Installation & Training	
mPrep/g Capsules, 96/bag	21505	See www.microscopyinnovations.com for a complete product list.	

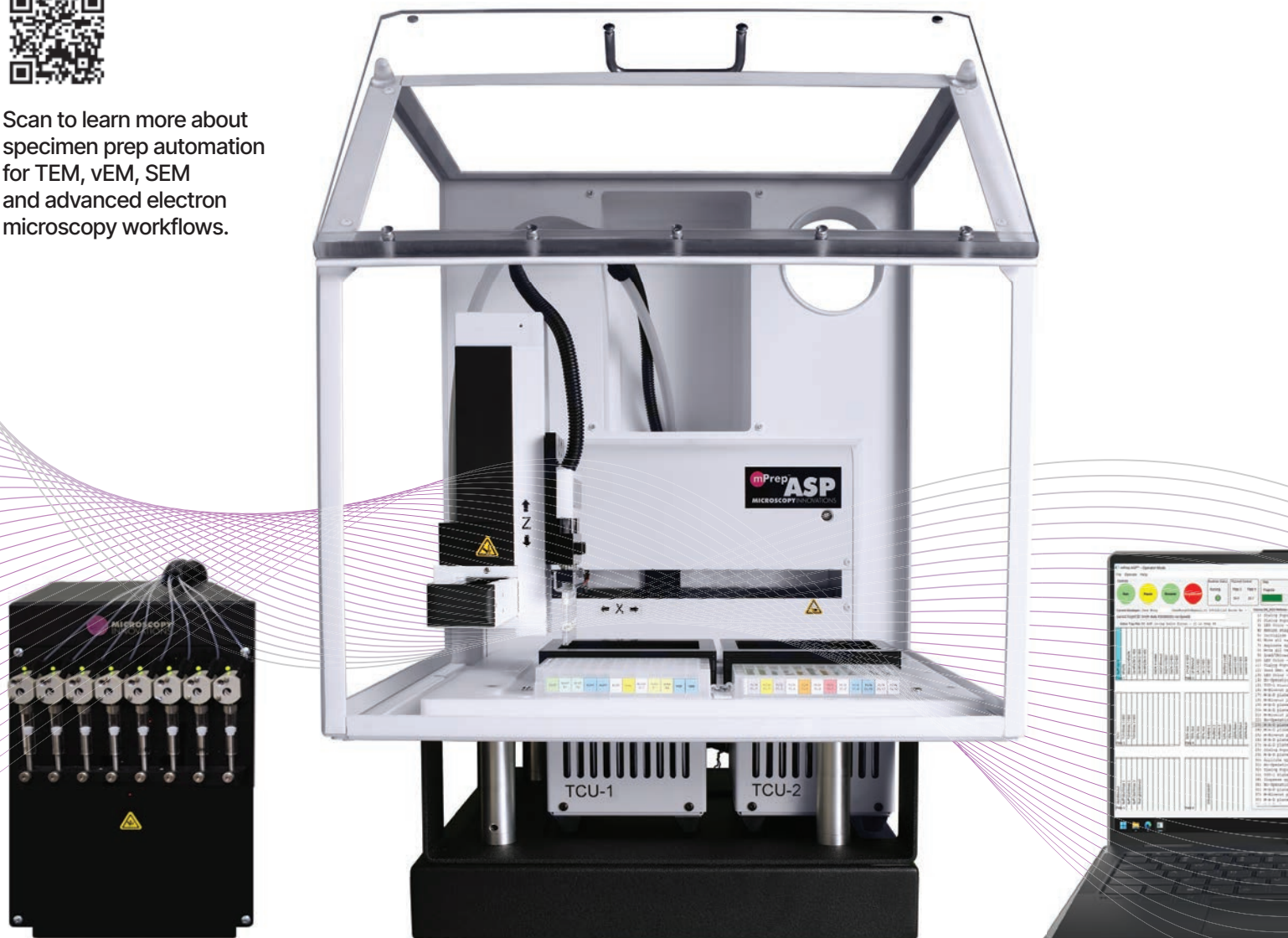
mPrep ASP 1500 & 2500 Specifications

BASE UNIT	Approx. dimensions with fume enclosure (W x D x H): 47 cm x 61 cm x 64.5 cm (18.5" x 24" x 25.4")
	Weight: ASP-1500 26.8 kg (59 lbs) ASP-2500 34 kg (75 lbs)
	6 ANSI/SLAS format 96-well or 12-column reservoir microplates
	Integrated, removable fume enclosure
	8-channel head
THERMAL CONTROL (ASP-2500 ONLY)	Independent heating and cooling of 2 reagent plate positions
	Temperature control from 0-100°C, protocol or independently controlled
	Anodized aluminum base and cover for thermal unit provide thermal mass to maintain steady temperature
PUMP MODULE	Dimensions (W x D x H): 20.3 cm x 20.3 cm x 30.5 cm (8" x 8" x 12")
	Weight: 7.3 kg (16 lbs)
EXHAUST FAN	Dimensions (W x D x H): 20 cm x 17 cm x 19 cm (8" x 7" x 7")
	Weight: 1.6 kg (3.5 lbs)
LAPTOP CONTROLLER	Dimensions (W x D): 25.4 cm x 35.6 cm (10" x 14")
	Weight: 1.1 kg (2.5 lbs)
	Windows, solid-state drive
	Software with preinstalled protocols and unlimited storage for user-defined protocols
CAPSULE REQUIREMENTS	mPrep/s or mPrep/g capsules
POWER REQUIREMENTS	120 VAC, 60 Hz (North America); 240 VAC, 50 Hz (Europe); 100 VAC, 50/60 Hz (Japan)
SYSTEM WEIGHT	ASP-1500 36.7 kg (81 lbs) Shipping Weight 65.8 kg (145 lbs) ASP-2500 44 kg (97 lbs) Shipping Weight 73 kg (161 lbs)

TRANSFORM YOUR EM WORKFLOW



Scan to learn more about specimen prep automation for TEM, vEM, SEM and advanced electron microscopy workflows.



Request an application consultation.

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www.microscopyinnovations.com



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