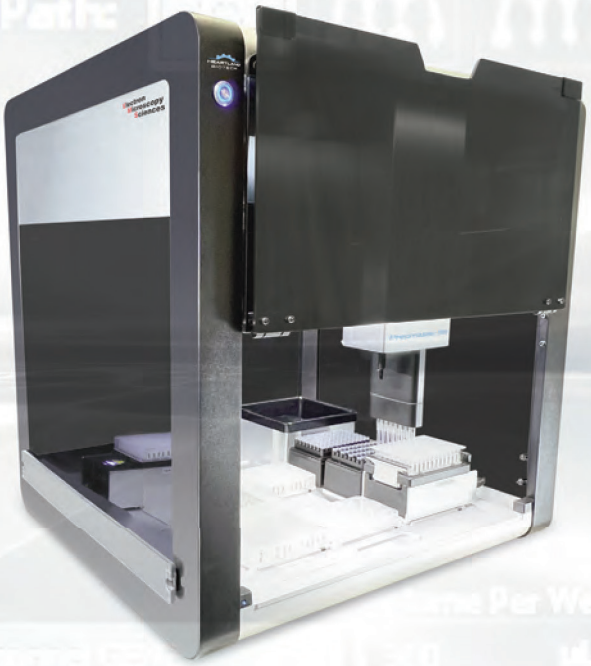
Prepmaster™ 5100

Specimen Preparation Robot

AN EMS EXCLUSIVE



More research, less prep

Electron Microscopy Sciences

SCIENCE SERVICES

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More research, less prep

Prepmaster™ 5100

Specimen Preparation Robot

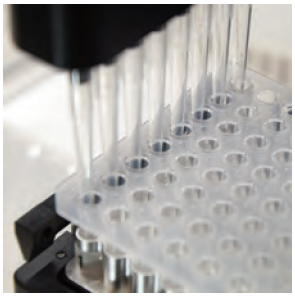
Overview

The Prepmaster™ 5100 is a fully automated system that uses advanced robotics and liquid handling to prepare biological specimens for TEM and SEM. It reliably accomplishes your repetitive tasks, increasing consistency in specimen preparation and giving you confidence in your results compared to manual processing.

Features

- Heated (RT–60°C) Agitation Station™ specimen dock provides gentle, constant shaking movement for rapid and thorough post-fixation and rinsing.
- Heated (RT–60°C) reagent reservoir for enhanced post-fixation with hot heavy metals or other reagents.
- Cooled (5°C–RT) reagent reservoir for cold dehydration or cold reduced osmium in the Ellisman rOTO protocol for example.
- Windows® laptop computer control for easy creation, modification, and storage of unlimited protocols.
- UV light protected ventilated enclosure keeps noxious fumes contained and vented. Small (60 x 60cm) footprint enables convenient in-hood option with enclosure removed.

Benefits



- Easy to set up and clean up.
- Versatile — can process most biological samples.
- Prepare up to **8 kidney specimens in less than 1 hour**.
- Excellent choice to run Ellisman rOTO protocol for vEM specimen prep.
- Up to 24 unique reagents or rinses.
- Reliable unattended overnight operation.
- High quality, consistent processing.

Example Protocols

The Prepmaster 5100 computer controller comes pre-loaded with example protocols for standard tissue preparation that can be run or easily modified or written from scratch to match your existing protocols. For example, protocols for kidney tissue prep with and without en-bloc UA staining can be easily created, modified, and stored.

Precision meets efficiency with 1-2-3 ease

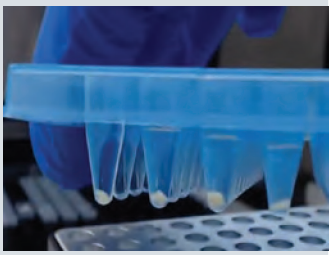
1 Load Reagents

Add sealed reservoir with freshly prepared osmium tetroxide and other hazardous reagents.

Buffer, water, and ethanol are stored in bulk reservoirs and refilled daily.

2 Load Specimen

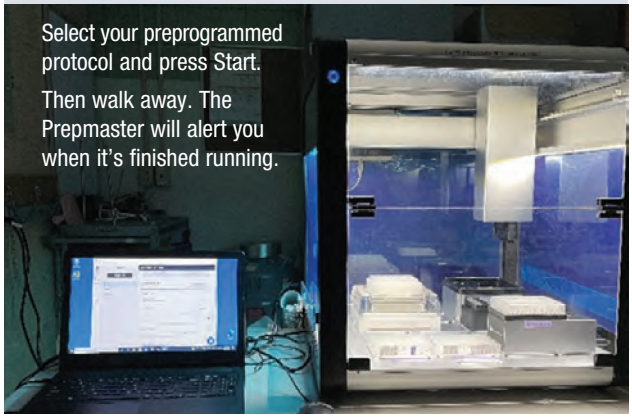
Transfer biological specimens to the sample processing plate. Set plate on sample dock.



3 Select Protocol & Press Start

Select your preprogrammed protocol and press Start.

Then walk away. The Prepmaster will alert you when it's finished running.



Ensures repeatability and reproducibility

Prepmaster Advantages

Cost-effective for lab budgets

- Uses standard labware; No proprietary, expensive consumables required.
- Up to 90% less reagent use saves purchase, shipping and disposal cost.
- Unattended operation frees time to work on other projects for greater lab productivity

Requires much less effort

- A typical kidney preparation manual protocol takes 4 hours of hands-on time.
- A Prepmaster run takes <5 minutes to load and start and <1 minute to remove the specimens and proceed to the next step resulting in a 75% decrease in total time and 97% decrease in hands-on time effort.

Error reduction

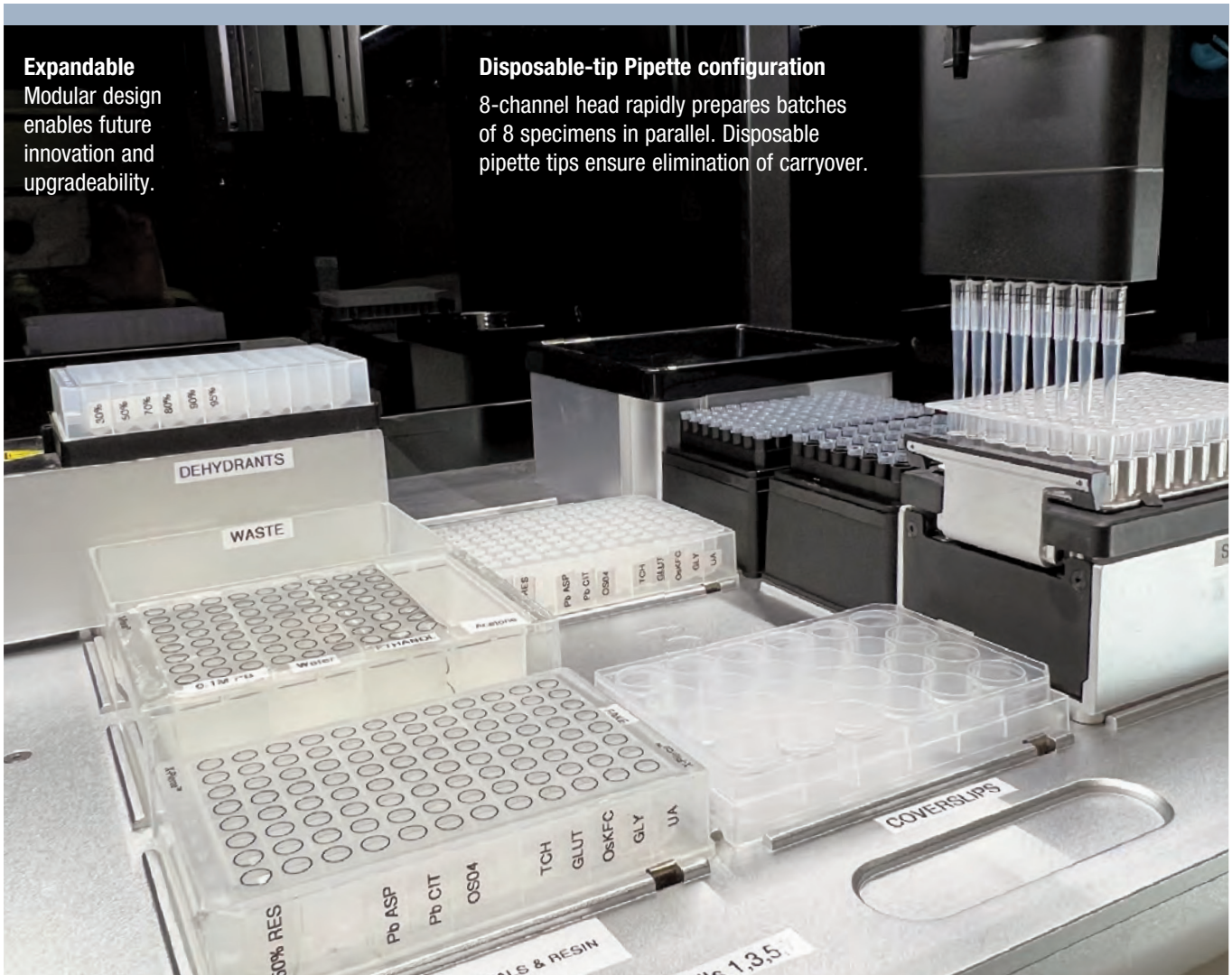
- Labs report up to 50% specimen processing failure rate due to loss or mishandling. A conservative estimate is a 10% loss. Many labs process 2-3 identical specimens to make sure they get at least one good one.
- The Prepmaster eliminates pipetting error and never selects the wrong reagent bottle, so decreases the possibility of pipetting error or reagent mis-handing to zero, decreasing the error rate to zero from 50% in some cases and a minimum 10% in most cases.

Prepmaster vs. the Competition

The limited automated solutions available are antiquated rotary "dipper" style units which use 30 ml of reagent per (8 sample) step, compared to as little as 3.5 ml per run in the Prepmaster and require extensive set-up and clean-up. Other solutions exist which require costly consumables which customers prefer not to use due to inconvenient handling and high cost-per-sample.

The Prepmaster is the ONLY OPTION AVAILABLE for cells seeded-on-coverslips.

	Prepmaster	Competition
Speed	Fast (typical kidney run <1 hour)	Slow (typical kidney run 3-4 hours)
Reliability	Zero failures	Breaks down often
Cost of unit	Less cost for more capabilities	More expensive to buy tissue processor and coverslip processor.
Reagent usage	3.5 ml/run	30ml/run
Reagent cost	90% less	Expensive
Design age	Modern	Antiquated
Ease of set up	Easy	Complicated
Ease of clean up	Easy	Messy, time-consuming
Hazardous waste disposal cost	90% less	Expensive
Control	Windows laptop	Keypad



Expandable
Modular design enables future innovation and upgradeability.

Disposable-tip Pipette configuration

8-channel head rapidly prepares batches of 8 specimens in parallel. Disposable pipette tips ensure elimination of carryover.

Heated Agitation Station™

For accelerated, enhanced tissue preparation.

Because penetration of osmium tetroxide or other post-fixatives into biological specimens can be slow and may result in uneven fixation, gentle agitation promotes uniform post-staining. The Prepmaster's heated (RT–60°C) Agitation Station ensures that the osmium tetroxide/fixative saturates the specimen evenly, allowing for more uniform and reliable fixation. Agitation increases contact between the fixative and the tissue, which enhances the fixation process and reduces overall fixation time. Heating the specimen often creates conditions optimal to the post-staining process by improving penetration of fixatives and stains, leading to more uniform results with enhanced contrast in imaging and reduced time.

Thermally-Controlled Reagent Reservoir

For temperature regulation of samples and reagents.

With separate heated (RT-60°C) and cooled (5°C–RT) 12-position reagent reservoirs, the Prepmaster 5100 enables researchers to optimize staining protocols by controlling the temperature of up to 12 reagents each. Thermal control helps maintain the integrity of the specimens leading to pristine ultrastructure. Often protocols require specimens to be incubated at low temperatures to enhance dehydration, and also require high temperatures in other steps to create conditions critical to the post-staining process. Heating a sample can induce penetration of fixatives and stains, leading to more uniform results, enhanced contrast in imaging, and reduced time. Cooling a specimen can minimize swelling or shrinking. The Prepmaster provides temperature regulation over both samples and reagents for complete control and optimization.

Computer Controller

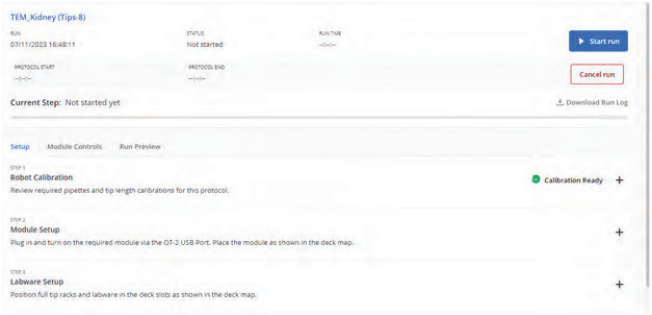
The Prepmaster 5100 computer controller comes pre-loaded with example protocols for standard tissue preparation (e.g., kidney) that can be run or easily modified to match your validated protocols. For example, protocols for kidney tissue prep with and without en-bloc UA staining can be easily created, modified, and stored.

Protocol development and protocol execution permissions are designed to enable 100% confidence in validated protocol use compliance. The Protocol Developer is responsible for methods performance, robustness, and validation. Protocol execution is limited to selecting the method and starting the run to ensure consistency.

Connectivity

The Prepmaster 5100 is a smart robot with all the advantages of internet connectivity. Remote technical support is available, including remote monitoring and control for real-time online assistance with methods development and troubleshooting.

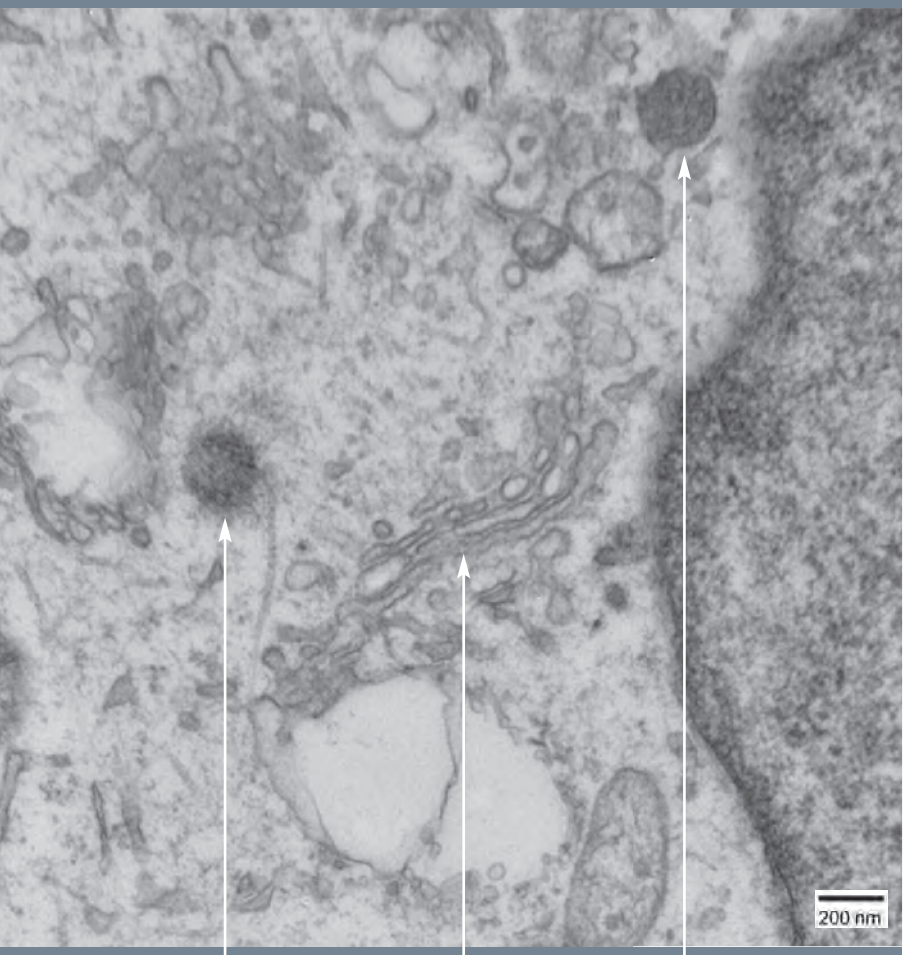
Up to 24 different reagents are used in the standard suite of BioEM protocols.



Select your preprogrammed protocol and press Start.

Applications

The versatile Prepmaster 5100 offers a wide range of applications for TEM, SEM, and LM including, but not limited to, tissue/biopsies (1mm dia. x 1–3mm length), cells seeded-on-coverslips, organoids, retinas, and most other biological samples.

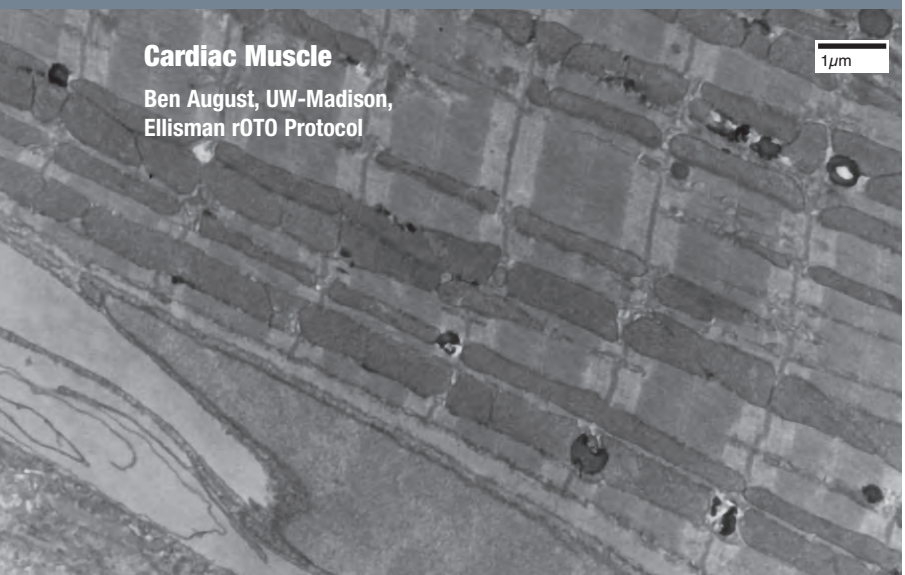


Astrocytes on Coverslips

Ben August, UW-Madison

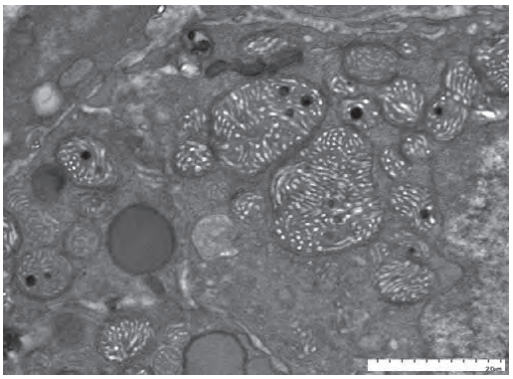
Cacodylate buffer with reduced osmium tetroxide shows beautifully preserved Golgi apparatus membranes, low cytoplasmic background, and easily visible microtubules.

"The laboratory robot enabled us to easily test 4 variables in one simple experiment with close to zero possibility of pipetting error."



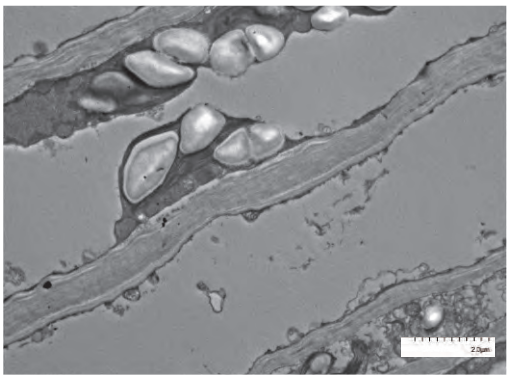
Cardiac Muscle

Ben August, UW-Madison,
Ellisman rOTO Protocol



Mouse Ovaries

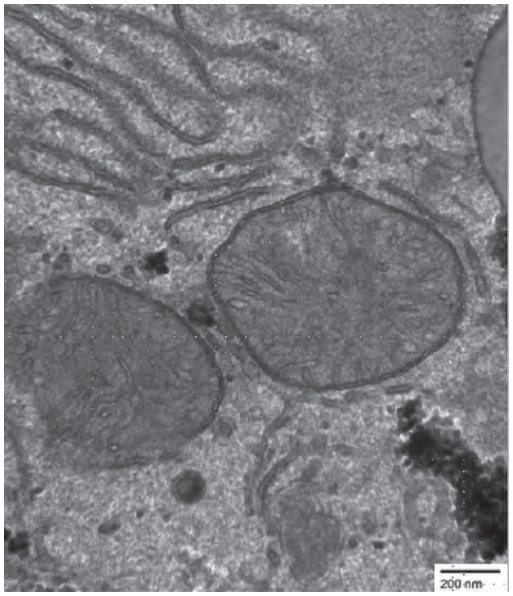
Ru-ching Hsia, Carnegie Institute of Science



Plant Root

Ru-ching Hsia, Carnegie Institute of Science

Hypocotyl taproot of *Aeschynomene americana*, a plant of the legume family commonly known as shy leaf or American joint vetch.



Liver Biopsy

Ellisman OTO protocol

Prepmaster™ 5100

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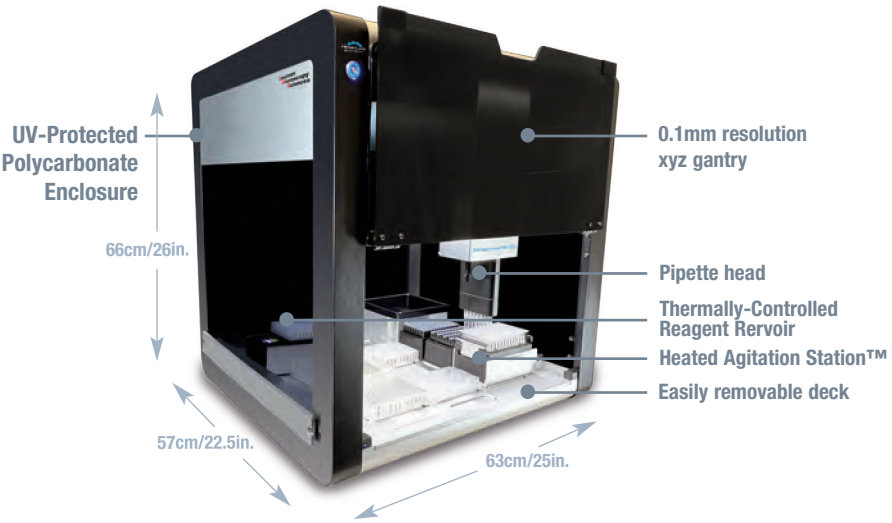
Specifications

Dimensions (W x D x H)	63 x 57 x 66 cm (25 x 22.5 x 26 in.)
Weight	48kg (105.8 lb.)
Frame Composition	Rigid steel and CNC aluminum
Operating Environment	*Temperature:* Recommended 20-24°C *Relative Humidity:* Recommended 40-60%
Power Requirements	*Robot Power Input:* 36 VDC, 6.1 A; *Power Adapter Input:* 100-240 VAC, 50/60 Hz, 4.0 A/115 VAC, 2.0 A/230 VAC
Minimum Operating System Requirements	1.7 GHZ processor, 4GB Memory, 256 GB SSD and Win 10 Pro.
Connectivity	WiFi 2.4 GHz IEEE 802.11b/g/n, USB 2.0
Certifications	CE, FCC, NRTL, CB, ISO 9001
Pipette Configurations	8-channel 300 µl pipetting head
Pipette Volumes	*8-channel:* 1-300 µl



Ordering Information

The Prepmaster 5100 Specimen Preparation Robot System includes:

Robot:

- Prepmaster 5100 Specimen Preparation Robot chassis
- Ventilated 99% UV blocking fume containment and evacuation enclosure
- Thermally Controlled (RT–60°C) Agitation Station™ Sample Dock
- Heated (RT–60°C) 12-position Reagent Reservoir
- Cooled (5°C–RT) 12-position Reagent Reservoir
- Windows laptop computer controller with power supply
- USB cable

Labware:

- (1) 4-position bulk reagent reservoir with 1 set of (4) reusable reservoirs
- (1) 96-well reservoir for heavy metals and other toxic reagents
- (1) 96-well reservoir for toxic reagent waste
- (1) 96-well reservoir for dehydration reagents
- (1) 1-well reservoir for non-toxic waste
- 1 Squeeze bottle for phosphate buffer refilling
- 1 Squeeze bottle for ethanol refilling
- 1 Squeeze bottle for water refilling

Consumables:

- 2 boxes of 96-well 300µl pipette tips
- 10 specimen prep plates
- (10) 1ml graduated transfer pipettes
- 10 X-pierce vinyl plate covers
- 10 aluminum plate seals

Cat. No.	Description	Qty.
51000	Prepmaster™ 5100 Specimen Preparation Robot System	each
Consumables		
51000-10	96-well Conical Plate Specimen Holder, 200µl	20/pk
51000-20	Reagent Reservor, 1.2ml Square Plate	10/pk
51000-25	Bulk Reagent Reservoirs	48/pk
Tips		
51000-30	Pipette Tips	100/pk