

Prepmaster™ 5100

Specimen Preparation Robot



Walk-away
specimen prep
automation

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Prepmaster™ 5100

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Overview

The Prepmaster™ 5100 is a fully automated system that uses advanced robotics and liquid handling to prepare biological specimens for TEM. It reliably accomplishes your repetitive tasks. Automation increases reliability and consistency in specimen preparation, giving you confidence in your results and efficiency in your workflows.

- Easy to set up and clean up
- Heated (RT - 60°C) Agitation Station™ provides gentle, constant movement for fast staining and rinsing
- Separate Thermal (5°– 60°C) Station enables cooled dehydration
- Up to 24 unique reagents or rinses possible
- Windows laptop computer control for easy creation, modification, and storage of unlimited protocols
- Reliable unattended overnight operation
- Ventilated enclosure keeps noxious fumes contained and vented. Small (60x60cm) footprint enables convenient in-hood installation with enclosure removed ensures repeatability and reproducibility

Features

- **Temperature controlled (5-95°C) sample dock.**
- **Up to 24 unique reagents or rinses.**
- **Windows laptop computer control for fast, easy protocol creation, modification, and storage.**
- **Example protocols included.**
- **Flat, low deck enables convenient in-hood installation or ventilated enclosure also available.**
- **Expandable for future applications.**

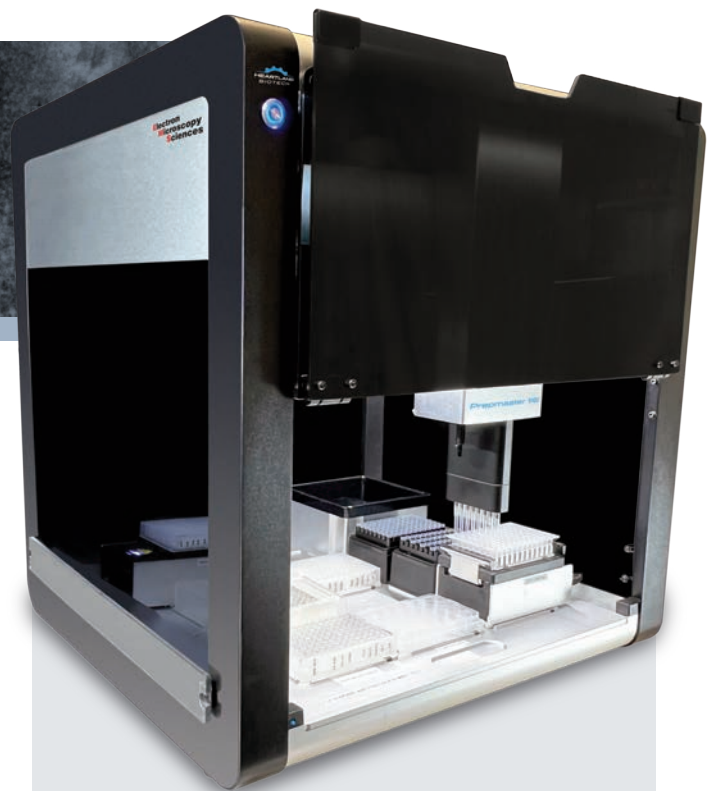
Applications

The Prepmaster 5100 offers a wide range of applications for TEM, SEM, and LM including, but not limited to, tissue/biopsies (1mm dia. @ 1-3mm thickness), cells-seeded-on-coverslips and resin-embedded histology samples.

Example Protocols

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. For example, protocols for kidney tissue prep with and without en-bloc UA staining can be easily created and stored.

**Electron
Microscopy
Sciences**



Advantages

- **Long protocols with 5 or more heavy metal steps, such as OTO, can be run safely overnight.**
- **Your current manual workflow can be translated to this platform quickly and easily.**
- **Remote viewing and operation via RealVNC included.**
- **Easy to set up and easy to clean up.**

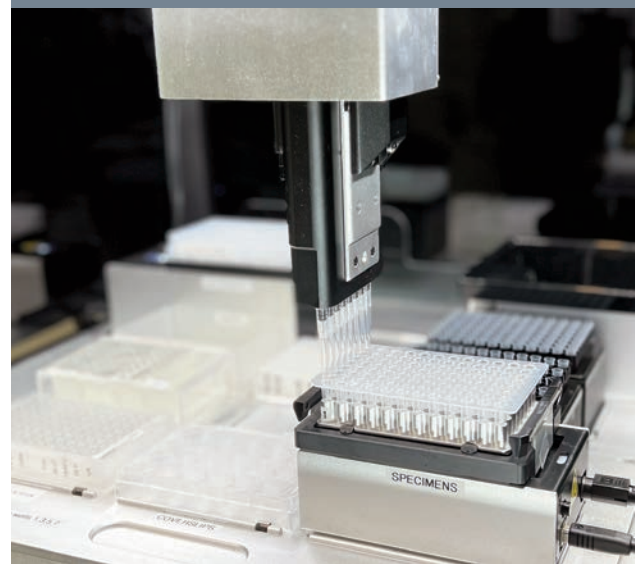
Pipette configurations

One single-channel and one 8-channel 300 ul pipetting head

Pipette volumes and specs

Single channel: 1-300 µL

8-channel: 1-300 µL



ensures repeatability and reproducibility...

Connectivity

The Prepmaster 5100 is a smart robot with all the advantages of internet connectivity. Remote technical support is available.

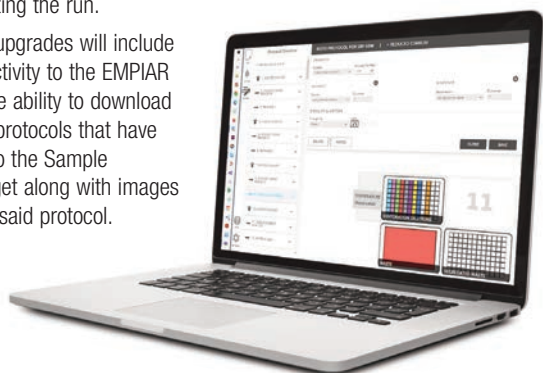
Computer Controller

The Prepmaster 5100 computer controller comes pre-loaded with example protocols for standard tissue processing (e.g., kidney) that can be run out of the box or easily modified to add/remove steps or extend incubation times for tissues that require longer incubations. An unlimited number of protocols can be saved. For example, protocols for kidney tissue processing with and without en-bloc UA. A pre-installation interview will provide our Applications Scientist a list of tissues or cells to be prepared on the Prepmaster and then a protocol will be ready at installation to ensure a smooth transition.

Being a smart system, remote monitoring and control allows for real-time online assistance for methods development and troubleshooting.

Protocol design/validation and protocol execution are distinct user interfaces enabling 100% confidence in validated protocol use compliance. The Protocol Developer is responsible for methods performance, robustness, and validity. The Robot Operator is limited to selecting the method and starting the run.

Future software upgrades will include seamless connectivity to the EMPIAR database with the ability to download and run verified protocols that have been entered into the Sample Preparation Widget along with images generated using said protocol.



Prepmaster and Agitation Station are trademarks of Heartland Biotech LLC.

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 enables 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 the 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 elapsed time.

Thermally-Controlled Reagent Reservoir

For temperature regulation of samples and reagents.

With a Hot (RT-60°C) 12-position reagent reservoir and a Cold (5°C-RT) 12-position reagent reservoir, 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 enhance penetration of fixatives and stains, leading to more uniform results, enhanced contrast in imaging, and reduced elapsed time. Cooling a specimen can minimize swelling or shrinking. The Prepmaster provides temperature regulation over both samples and reagents for complete control and optimization.

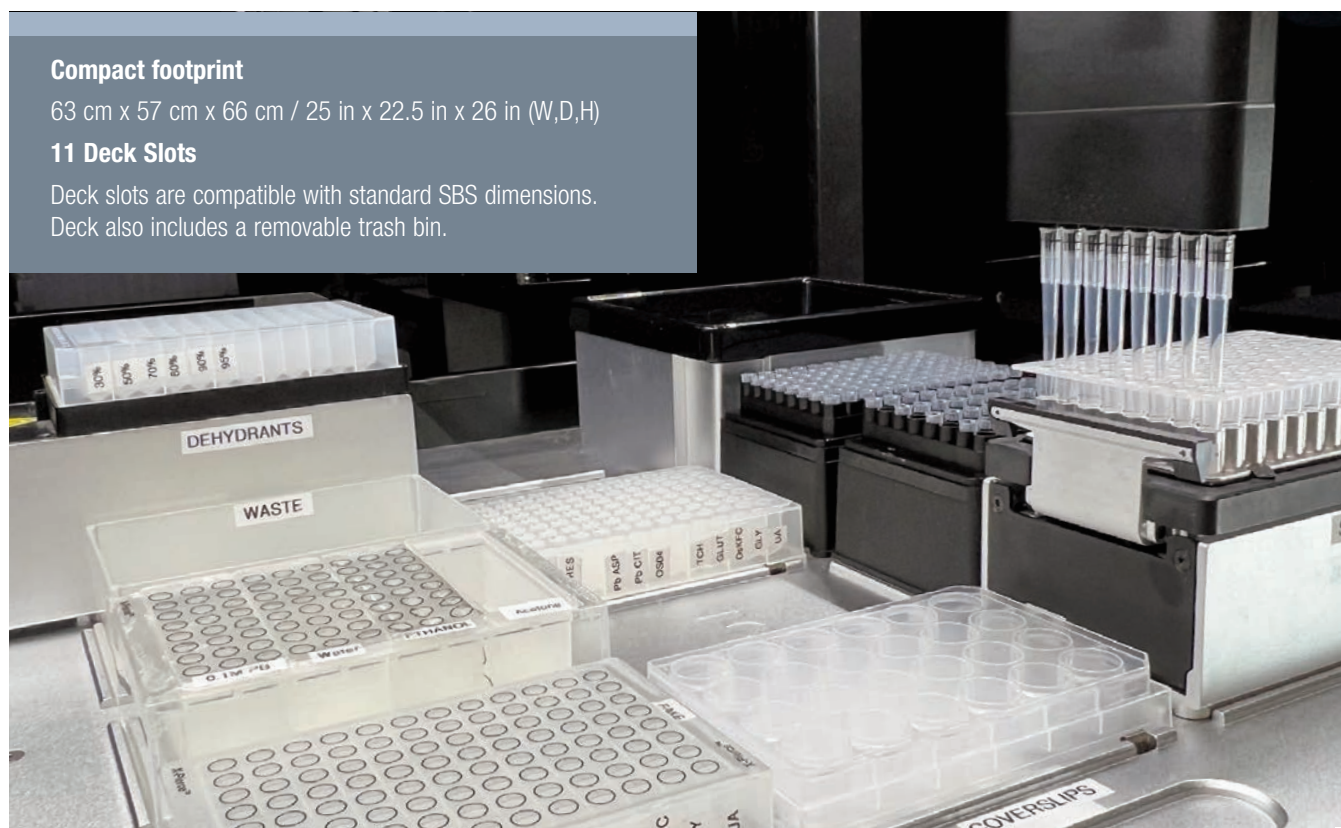


Compact footprint

63 cm x 57 cm x 66 cm / 25 in x 22.5 in x 26 in (W,D,H)

11 Deck Slots

Deck slots are compatible with standard SBS dimensions. Deck also includes a removable trash bin.

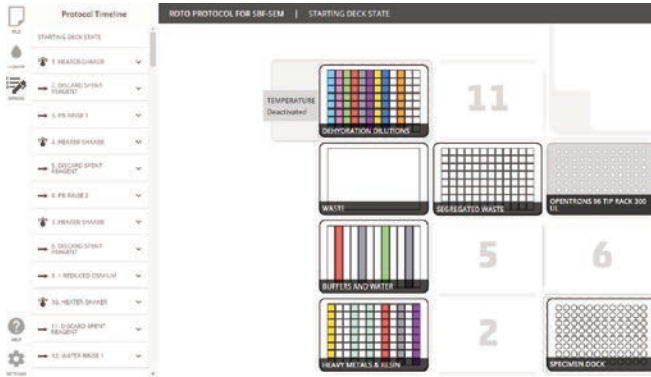


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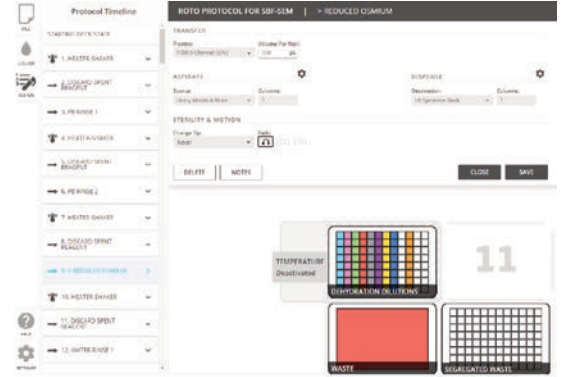
Specimen Preparation Robot

Protocol Design Interface

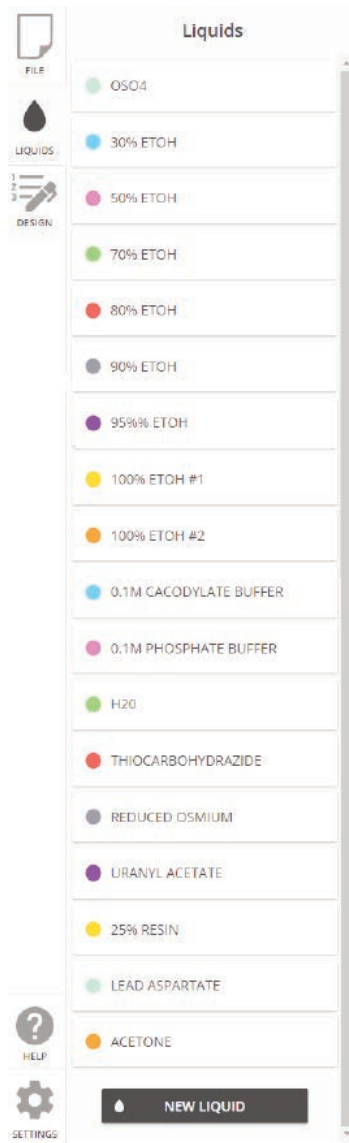
Prepmaster 5100 comes pre-programmed with standard protocols.



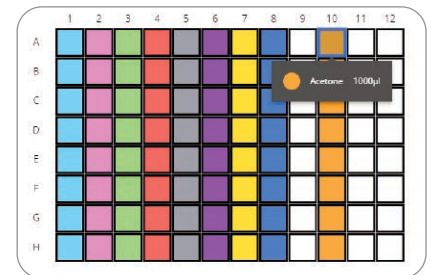
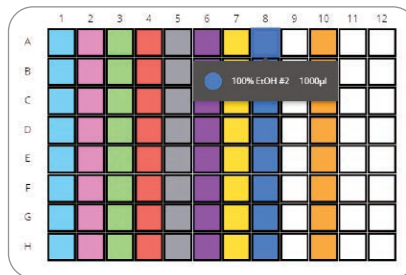
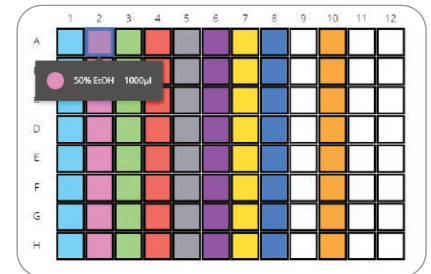
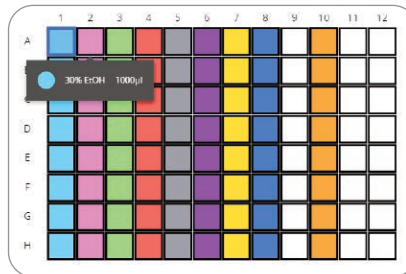
Adding or deleting a step is simple and easy.



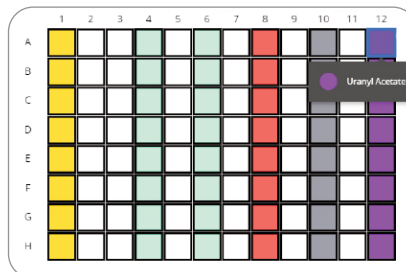
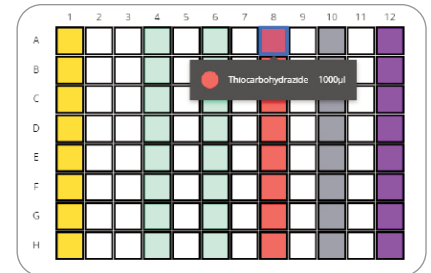
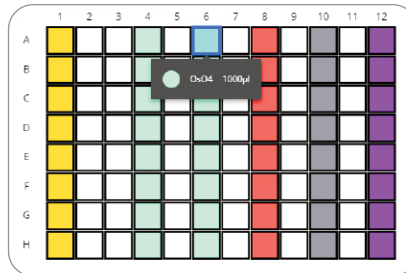
18 different reagents are used in the standard suite of BioEM Protocols.



Dehydration Reagent Dilutions Reservoir Plate



Heavy Metal Plate



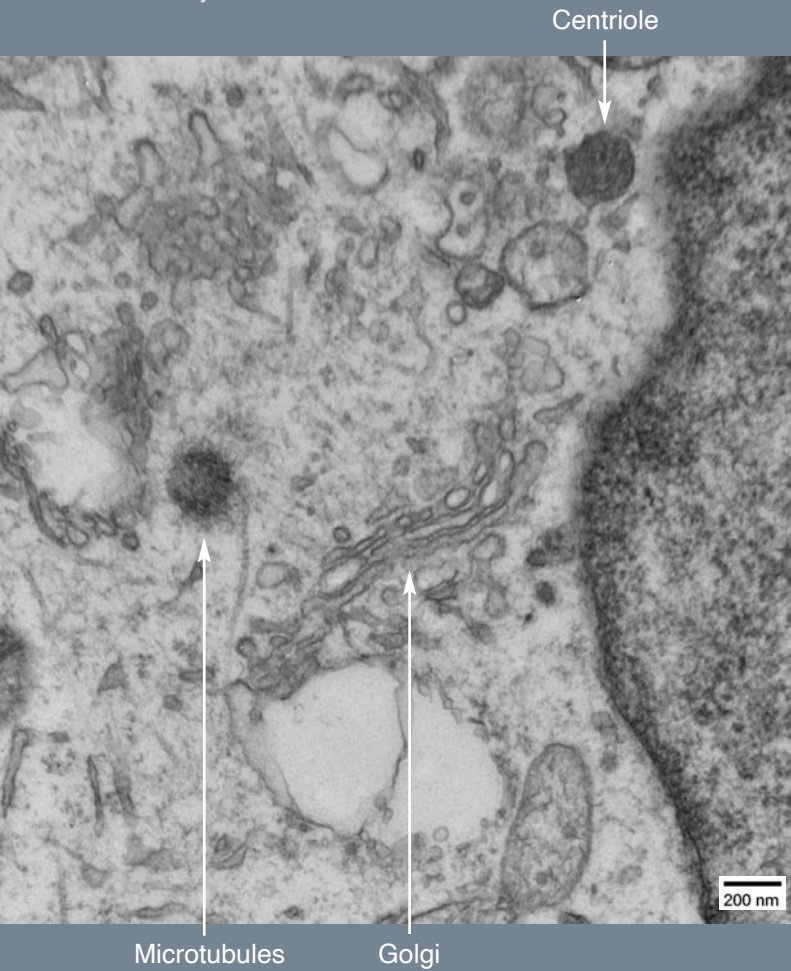
Applications

Astrocytes on Coverslips

Ben August, UW-Madison

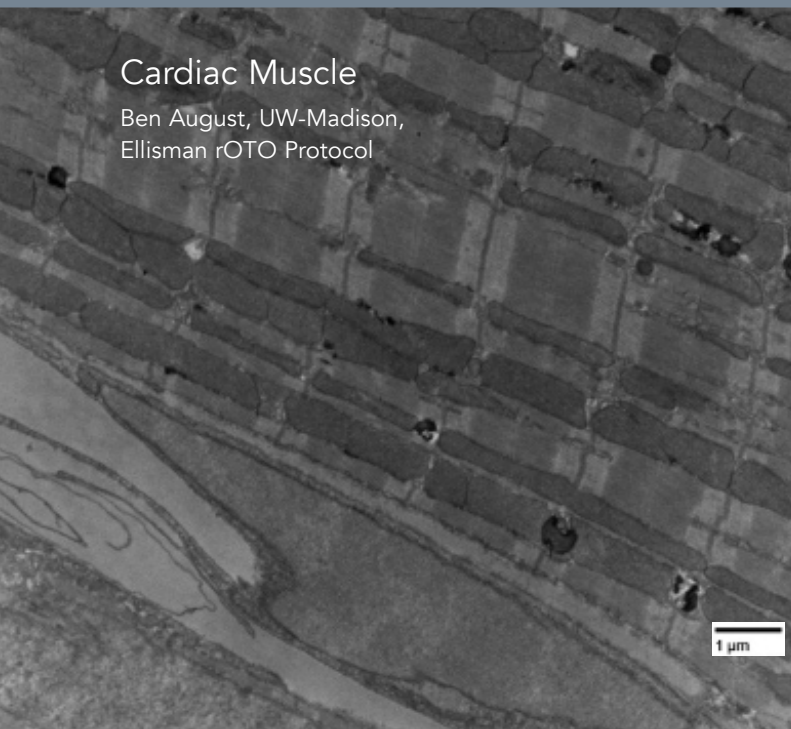
“The laboratory robot enabled us to easily test 4 variables in one simple experiment with close to zero possibility of pipetting error.”

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



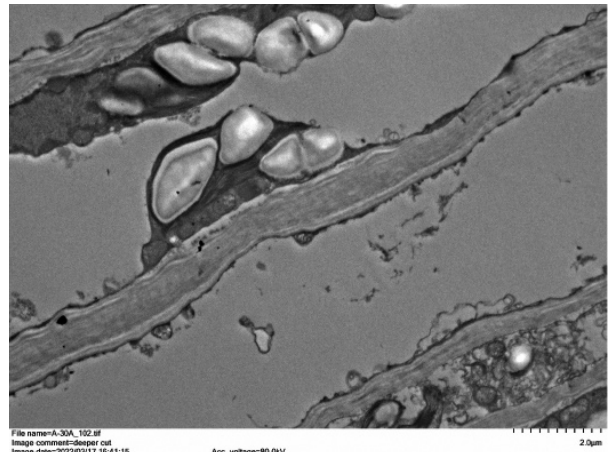
Cardiac Muscle

Ben August, UW-Madison,
Ellisman rOTO Protocol



Plant Root

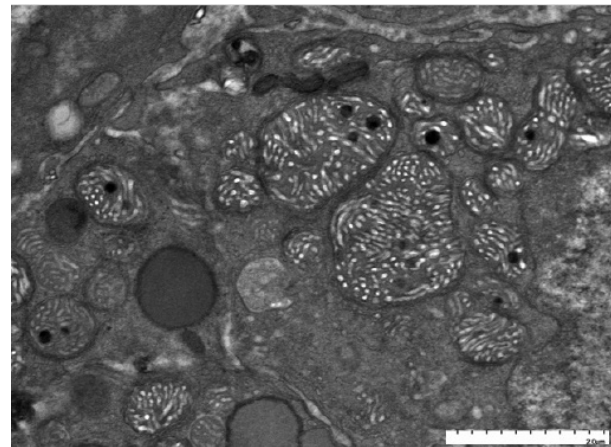
Ru-ching Hsia, Carnegie Institute Of Science



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

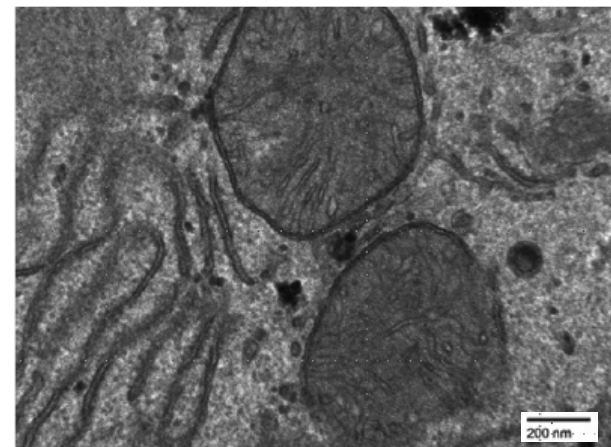
Mouse Ovaries

Ru-ching Hsia, Carnegie Institute Of Science



Liver Biopsy

Ellisman OTO protocol

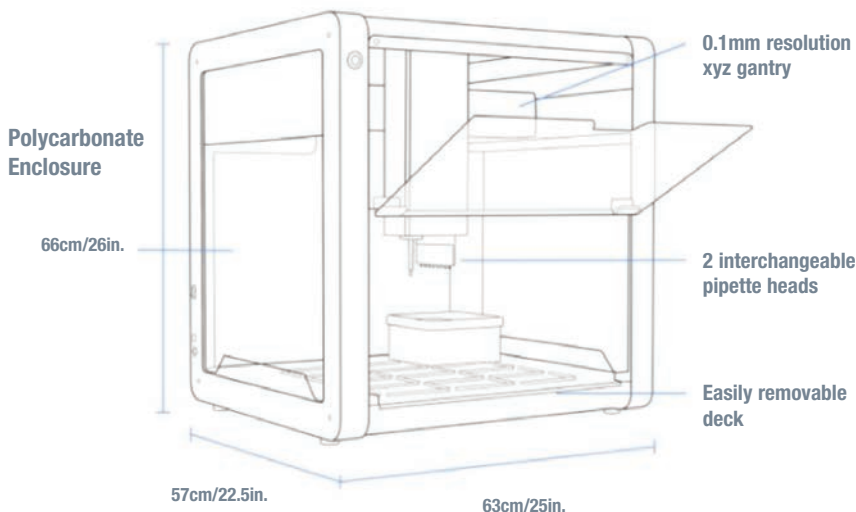


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Specimen Preparation Robot

Specifications

Dimensions (W x D x H)	63 x 57 x 66 cm (25 x 23 x 26 in.)
Weight	48kg (105.8 lb.)
Frame Composition	Rigid steel and CNC aluminum
Operating Environment	<i>Temperature:</i> Recommended 20-24 °C <i>Relative Humidity:</i> Recommended 40-60% RH
Power Requirements	<i>Robot Power Input:</i> 36 VDC, 6.1 A; <i>Power Adapter Input:</i> 100-240 VAC, 50/60 Hz, 4.0 A/115 VAC, 2.0 A/230 VAC
Minimum Operating System Requirements	1.7 GHZ processor, 16GB 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	One single-channel and one 8-channel 300 ul pipetting head
Pipette Volumes	<i>Single channel:</i> 1-300 µL; <i>8-channel:</i> 1-300 µL

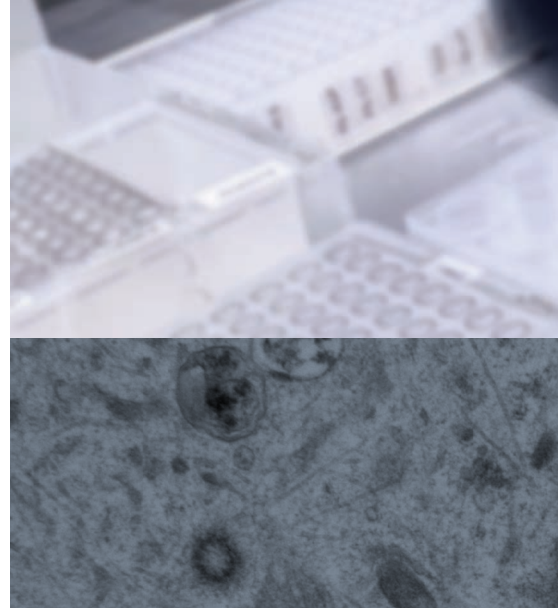


Ordering Information

The Prepmaster 5100 Specimen Preparation Robot System includes...

- Prepmaster 5100 Specimen Preparation Robot chassis
- Ventilated 99% UV blocking fume containment and evacuation enclosure
- Room Temperature (RT) -60°C Thermally Controlled Sample Dock with Agitation
- RT-60°C Heated Reagent Reservoir
- 5°C-RT Cooled Reagent Reservoir
- Windows laptop computer controller with power supply
- USB cable
- 10 specimen prep plates
- 2 boxes of 96-well 300ul pipette tips
- (1) 4-position bulk reagent reservoir with 1 set of (4) reusable reservoirs and 10 disposable vinyl plate covers
- (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
- 1 bag (10 each) 1ml graduated transfer pipettes
- 1 box (100 Ea.) X-pierce vinyl plate covers
- 1 box (100 Ea.) aluminum plate seals

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



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