tapestri

Tapestri® Instrument

User Guide

Moving precision medicine FORWARD.

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Contact.

Mission Bio, Inc.
6000 Shoreline Ct Ste 104
South San Francisco, CA 94080
USA
www.missionbio.com
+1 415 854 0058

For technical support visit www.missionbio.com.

Email: support@missionbio.com

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About This Guide

This User Guide describes how to use the Mission Bio Tapestri Platform, comprising the Tapestri Instrument, the DNA Cartridge, and the instrument software.

Please consult the *Tapestri Instrument Requirements Guide (PN 65307)* for additional information.

Introducing the Tapestri Instrument

Mission Bio Technical Support

For questions or comments about the configuration and use of the Tapestri Instrument, please contact Mission Bio customer support at **support@missionbio.com.**

Intended Use

The Mission Bio Tapestri Platform is a microfluidic single-cell droplet system that provides a high-throughput single-cell genomics workflow for targeted DNA sequencing applications. The instrument encapsulates single cells into individual aqueous droplets, then pairs lysed cell contents with barcoding beads and gene-specific primers for targeted single-cell DNA-sequencing of human genomic DNA. The instrument may be used with samples from a number of tissue sources, including peripheral blood mononuclear cells, bone marrow aspirate derived mononuclear cells, and nuclei from solid tumors. The Tapestri Platform is not intended for processing cells for single-cell RNA-sequencing applications.

Components of the Tapestri Instrument

The Tapestri Platform consists of the instrument itself, the DNA Cartridge, and reagents. The instrument is equipped with an integrated UV light source that enables barcode-sequence containing DNA to be cleaved off Barcoding Beads. The cartridge, which represents the microfluidics device, is equipped with reservoirs that are used to load reagents required for automated cell processing. Pressure supplied by the instrument drives the fluids from the reservoirs through the microfluidic device out to PCR collection tubes that are mounted below the DNA Cartridge. The cartridge with tubes and reagents can be loaded onto the instrument, then unloaded from the instrument and disposed following a full workflow. As a result, contamination is limited.

The Tapestri Instrument is designed to receive the reagent-filled cartridge and drive the fluidics as programmed, using pressurized air. The instrument seals the DNA Cartridge using a gasket placed on the top of a loaded cartridge and a lid with a levered handle. The user interacts with the instrument via a touch screen interface, which can be used to select programs and monitor the status of running programs.

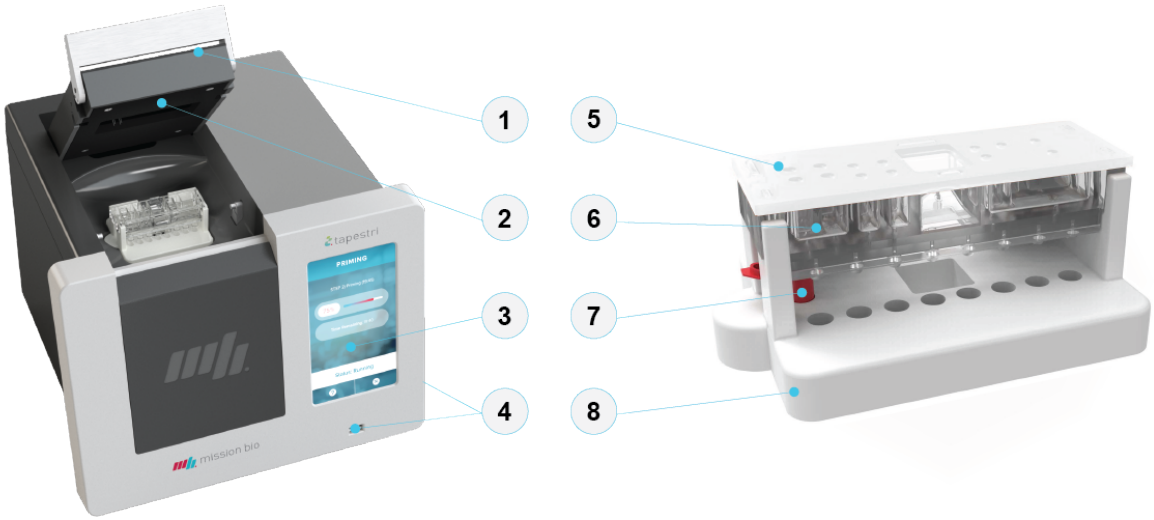


Figure 1. Tapestri Platform and Components (Reagents not shown)

1. **Lid**
   Levered lid to open and close the instrument and install the DNA Cartridge.
2. **Integrated UV light source**
   To cleave barcode-containing DNA from Barcoding Beads.
3. **Touchscreen**
   To interface with the instrument's software and select programs.
4. **USB Port [on the back panel of the instrument]**
   To export diagnostics data.
5. **Tapestri DNA Gasket**
   To seal the instrument lid.
6. **Tapestri DNA Cartridge**
   Microfluidics device to load with reagents and cells.
7. **Collection Tubes**
   Collection tubes to collect emulsions.
8. **Base Plate**
   Foundation to mount DNA Cartridge and collection tubes.

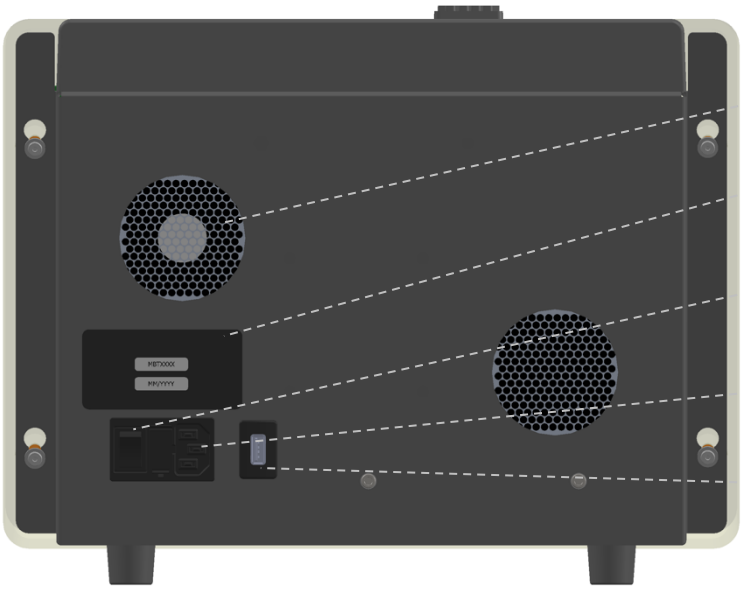


Figure 2. Tapestri Instrument – Back panel

COMPONENTS INCLUDED IN SHIPPING BOX

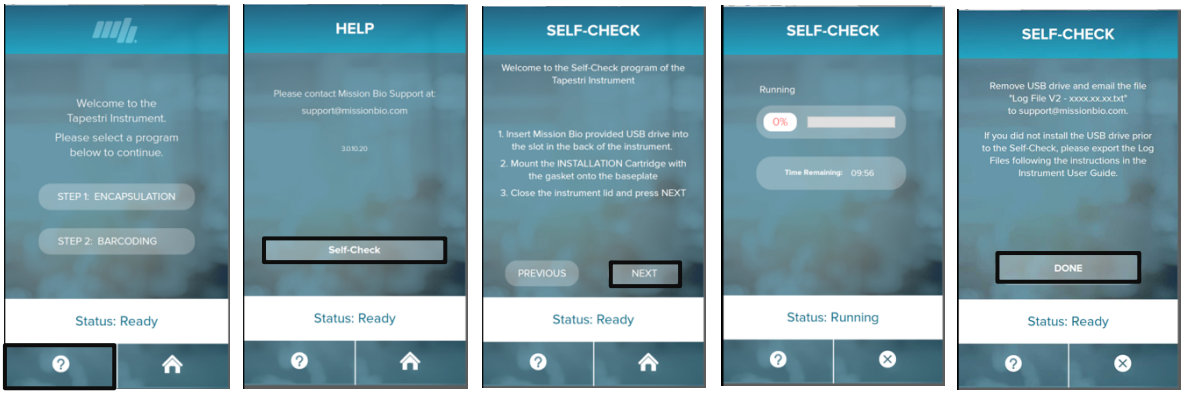
Component	Purpose	Quantity
Tapestri Instrument (PN 64432)	To process single cell suspension for high-throughput single-cell DNA-seq applications.	1
Power cable, 6ft, NEMA 5-15P plug to IEC-320-C13 (Tapestri receptacle), 18AWG, SJT, 10A, 120V (PN 72890)	Country-specific power cable to connect the Tapestri Instrument to the wall socket.	1
Base Plate (PN 95030)	To mount DNA Cartridge and collection tubes.	1
USB Drive	To store log files after Self-Installation.	1
Installation Cartridge + DNA Gasket	To run Self-Installation program.	1

Installing the Tapestri Instrument

This chapter describes how to install the Tapestri Instrument.

1.1 Turn on the instrument, using the ON/OFF switch on the back panel of the instrument.

1.2 Press the question mark button on the home screen to access the SETUP menu.



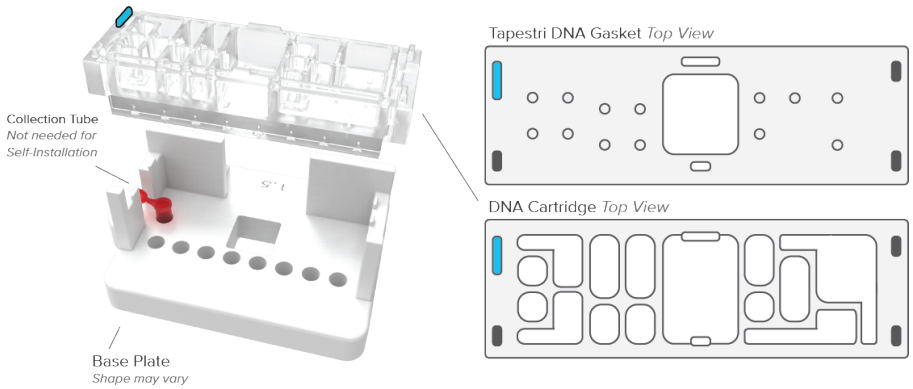
1.3 Press **SELF-CHECK** and follow the instructions on the screen to start the self-installation program:

1.4 Plug a Mission Bio provided **USB drive into the USB slot** on the back panel of the Instrument.

1.5 Open the instrument lid and **mount the Base Plate** into designated slot.
Base Plate may be already located inside the instrument upon arrival.

1.6 Place the Installation Cartridge (DNA Cartridge) onto the Base Plate with the **long notch** on the side of the cartridge oriented on the **top left**.

1.7 **Apply the Tapestri DNA Gasket** on top of the cartridge. Make sure it is oriented correctly.



1.8 Firmly **close the instrument lid**, until the lid handle is level and flush with the top of the lid and instrument.

1.9 Run the **SELF-CHECK** program. The program runs for about **10 minutes**.

1.10 When the touchscreen displays **DONE**, open the lid and remove the cartridge with the gasket from the Base Plate and store at a dust-free area.

1.11 Remove the USB drive and **email the exported log files** to support@missionbio.com.

Using the Tapestri Instrument

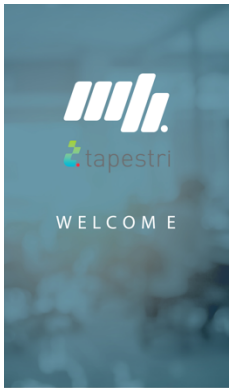
This chapter describes how to use the Tapestri Instrument.

NOTE ***The Tapestri Instrument is shipped in one corrugated plastic box containing the instrument, power cable and Base Plate. It weighs 14 lb (6.35 kg). Use caution when moving the shipping box.***

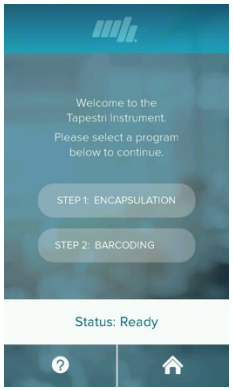
Set up the Instrument

The Tapestri Instrument is a stand-alone desktop instrument that requires one grounded electrical connection. The instrument has an AC power input socket and a power ON/OFF switch on the bottom left corner of the back panel. Plug the power cable into the AC power input socket. Consult the *Tapestri Instrument Site Requirements Guide (PN 65307)* for additional information.

Start the Instrument



1.1 Turn on the instrument, using the ON/OFF switch on the bottom left corner of corner of the back panel. As the instrument boots the touchscreen will briefly display a Welcome screen. During instrument startup the instrument initializes all system components.



1.2 After instrument startup is completed the home screen displays.

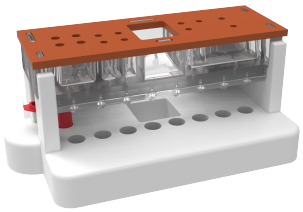
Install the Tapestri DNA Cartridge

1.3 Open the instrument lid and place the Base Plate onto the insert area as shown.

1.4 Remove the DNA Cartridge from its original packaging and mount it onto the Base Plate.

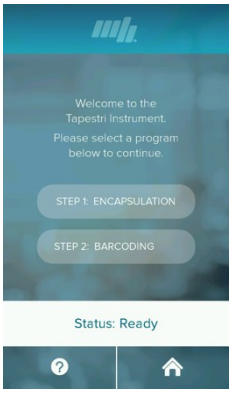
NOTE ***When running an experiment, insert either one 0.2mL Axygen MAXYmum Recovery PCR tube (Encapsulation) or eight 0.2mL Axygen MAXYmum Recovery PCR tubes (Barcoding) in the slots of the Base Plate. Load the DNA Cartridge reservoirs with the appropriate reagents. Refer to the Mission Bio Tapestri Single-Cell DNA AML User Guide (PN 3354) for additional information.***

1.5 Remove the DNA Gasket from its original packaging and mount onto the DNA Cartridge.



1.6 Close the instrument lid.

Using the Tapestri Software



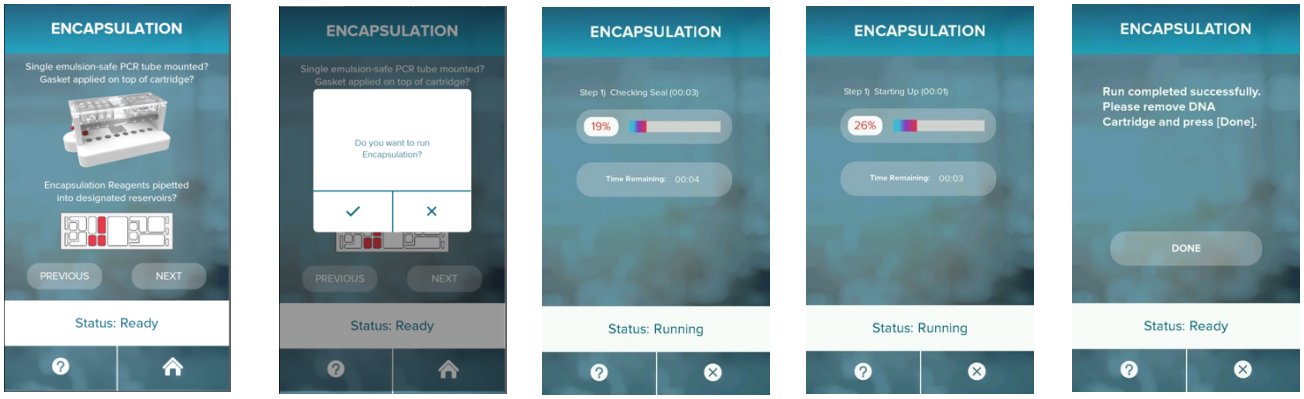
At any time when the instrument shows: Status: Ready, you may:

- Press the home button to return to the home screen.
- Press the question mark button to access Help pages that provide additional information related to the content that is displayed on the touchscreen.

See ***Appendix C*** for additional information.

Run Encapsulation Program

Start | Confirmation | Initialization | Running | Completed



The screens shown above will display as you complete the following steps.

1.7 Press **Step 1: Encapsulation** on the Tapestri Instrument touchscreen to start the **Cell Encapsulation** program.

1.8 Press NEXT to continue to the 'Confirmation' screen. If necessary press PREVIOUS to return to the home screen.

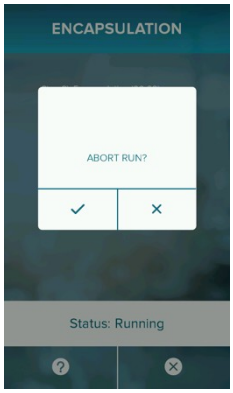
1.9 Press ✓ to confirm the choice to run the Encapsulation program. If necessary press ✕ to return to the Confirmation screen.

1.10 Wait about 5 minutes while:

- The instrument initializes the run by checking that the pressures can be applied correctly (4 seconds) and by analyzing the data from the check (1 second).
- The Encapsulation program runs. The status of the program is displayed via a status bar (%) and countdown (time).

1.11 When the run is completed, press DONE to return to the home screen.

[OPTIONAL] Abort Encapsulation Program



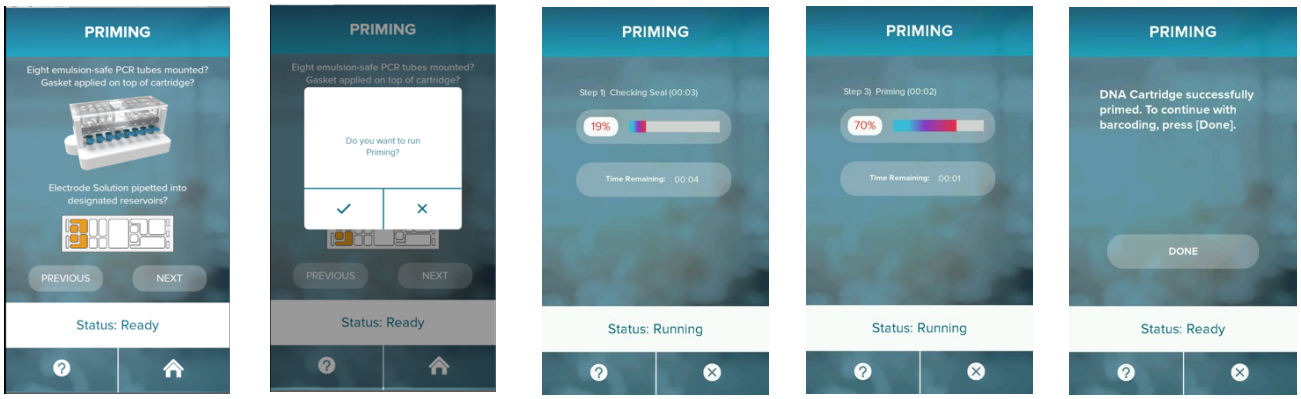
While the instrument is initializing or running the Encapsulation program, the run can be aborted at any time.

1.12 Press at the bottom right corner of the touchscreen to cancel the program.

1.13 Select to confirm the choice to abort the Encapsulation program. Selecting will interrupt the program abort and return to the previous screen.

Run Priming Program

Start | Confirmation | Initialization | Running | Completed



The screens shown will display as you complete the following steps.

1.14 Press **Step 2: Barcoding** on the Tapestri Instrument touchscreen to start the **Priming** program.

1.15 Press NEXT to continue to the 'Confirmation' screen.
If necessary press PREVIOUS to return to the home screen.

1.16 Press to confirm the choice to run the Priming program.
If necessary press to return to the Confirmation screen.

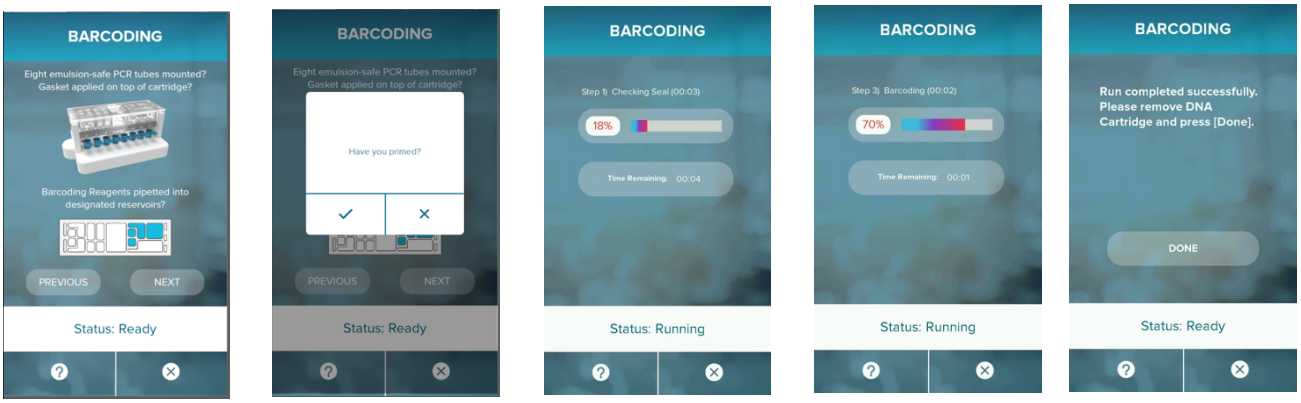
1.17 Wait about 20 minutes while:

- The instrument initializes the run by checking that the pressures can be applied correctly (4 seconds) and by analyzing the data from the check (1 second).
- The Priming program runs. The status of the program is displayed via a status bar (%) and countdown (time).

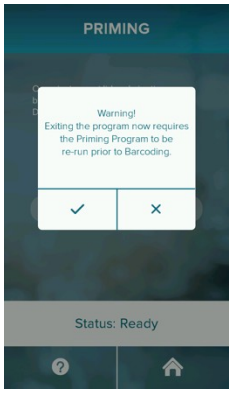
1.18 When the run is completed, press DONE to return to the home screen.

Cell Barcoding

Start | Confirmation | Initialization | Running | Completed



The screens shown will display as you complete the following steps.



NOTE

Exiting the Barcoding Program at this stage will require you to re-run the Priming program prior to Cell Barcoding. Press to confirm that you want to exit the Barcoding program. Press to return to the Barcoding start screen.

1.19 Press NEXT to continue to the 'Confirmation' screen. If necessary press PREVIOUS to return to the home screen.

1.20 Press ✓ to confirm the choice to run the Barcoding program. If necessary press ✕ to return to the Barcoding start screen.

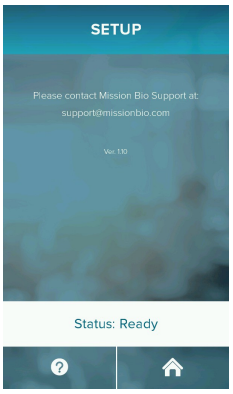
1.21 Wait about 35 minutes while:

- The instrument initializes the run by checking that the pressures can be applied correctly (4 seconds) and by analyzing the data from the check (1 second).
- The Barcoding program runs. The status of the program is displayed via a status bar (%) and countdown (time).

1.22 When the run is completed, press DONE to return to the home screen.

Updating the Tapestri Firmware

The firmware of the Tapestri Instrument may be updated to add new programs. Please contact Mission Bio Support (**support@missionbio.com**) to inquire about an updated version of the Tapestri firmware.

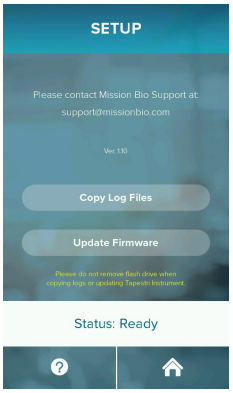


1.1 Turn on the instrument, using the ON/OFF switch on the bottom left corner of corner of the back panel.

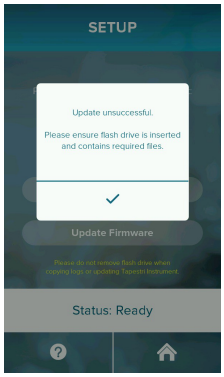
1.2 Press the question mark button on the home screen to access the SETUP menu.

1.3 Press the middle of the screen on top of the version number three times to unlock the administrator menu.

1.4 Plug a USB drive that contains the new firmware into the Tapestri Instrument.



1.5 Press *Update Firmware* to upload the new firmware. This process may take several seconds. Once the new firmware is uploaded the instrument reboots and confirms the successful upload.



Cleaning the Tapestri Instrument

This section describes how to clean and maintain the Tapestri Instrument for optimal performance.

Cleaning the Electrodes

Use a lint-free wipe dampened with warm water to remove salt water/dried salt from the electrodes. This should be done following every run.

NOTE ***Do not leave the DNA Cartridge in the instrument after use. Avoid leaving the electrodes in Electrode Solution longer than necessary.***

Cleaning the Touchscreen and Instrument

Spray cleaning solution on a lint-free cloth and then gently wipe the instrument surface and touchscreen as needed.

IMPORTANT ***Do not spray cleaning solution directly on the touchscreen; it can penetrate the seams around the screen and cause damage. Do not use bleach to clean the instrument; it is corrosive to metal.***

Before using a cleaning or decontamination method other than those recommended by Mission Bio, verify with Mission Bio technical support that the proposed method will not damage the equipment.

Maintaining the Instrument

For optimal performance of the Tapestri Instrument, we recommend:

- Annual maintenance by a certified Mission Bio service representative.
- Using replacement parts supplied only by Mission Bio.

Disposal of DNA Cartridges and DNA Gaskets

Dispose of used DNA Cartridges and DNA Gaskets in accordance with federal, state, regional, and local laws for hazardous waste disposal.

Troubleshooting

Observation	Possible Cause	Recommended Action
The Instrument lid does not close.	DNA Cartridge and/or gasket not properly installed.	Check correct orientation of DNA Cartridge and ensure that the gasket is properly seated on DNA Cartridge.
	Multiple gaskets installed.	Make sure no second gasket is still attached under the lid before closing.
	One of two pins on the side of the chip door is missing.	Ensure that both pins are on either side.
The Instrument reports a sealing error message.	Gasket and/or manifold not clean.	Check that gasket and manifold are clean and free of dust.
	DNA Cartridge and/or gasket not properly installed.	Check correct orientation of DNA Cartridge and ensure that the gasket is properly seated on DNA Cartridge.
	Multiple gaskets installed.	Make sure no second gasket is still attached under the lid before closing.
Touchscreen freezes	Instrument operating system under-powered.	Power cycle instrument by turning it off, wait 20 seconds, and turning it back on.

Appendices

A. Related Documentation

Document Title	Part Number
Tapestri Instrument Site Requirements Guide	PN 65307
Tapestri Single-Cell DNA Sequencing User Guide	PN 3354
Tapestri Single-Cell DNA Sequencing User Guide QRC	PN 6867

B. Safety

In addition to your site-specific safety requirements at the instrument location, Mission Bio recommends the following general safety guidelines in all laboratory areas.

GENERAL SAFETY

- Use personal protective equipment (PPE): safety glasses, fully enclosed shows, lab coats, and gloves.
- Be familiar with the locations of all safety equipment: fire extinguishers, spill kits, eyewashes, showers, first-aid kits, safety data sheets.
- Know the emergency exit locations and emergency/injury reporting procedures.
- Do not eat, drink, or smoke in the lab areas.
- Maintain clean work areas.
- Wash hands before leaving the lab.

INSTRUMENT SAFETY

WARNING Do not modify the device. Unauthorized modifications may create a safety hazard.

CAUTION **PINCH HAZARD**. The Tapestri lid can pinch your hand. Ensure that your fingers, hands, shirtsleeves, etc. are clear of the door when closing the Tapestri instrument lid.

WARNING **BIOHAZARD**. If you are working with biohazardous material on the Tapestri instrument, use appropriate PPE and adhere to Biosafety in Microbiological and Biomedical Laboratories (BMBL) from the Centers for Disease Control and Prevention and to your lab's safety protocol to limit biohazard risks. If biohazardous materials are used, properly label the equipment as a biohazard. For more information, see the BMBL guidelines online at: cdc.gov/biosafety/publications/index.htm.

ELECTRICAL SAFETY

WARNING **ELECTRICAL HAZARD**. Electrical shock can result if the Tapestri Instrument is operated without its protective covers.

WARNING **ELECTRICAL HAZARD**. Electrical shock can result if the Tapestri Instrument is not plugged into a properly grounded receptacle with adequate current capacity.

WARNING **ELECTRICAL HAZARD**. Gold electrodes in lid are operated at high voltage (300Vrms) when the lid is closed. Ensure that they are not improperly contacted during operation.

CHEMICAL SAFETY

- Read and understand all safety data sheets (SDSs) provided by chemical manufacturers before you use, store, or handle any chemicals or hazardous materials.
- Wear PPE (gloves, safety glasses, fully enclosed shoes, lab coat) when handling chemicals.
- Do not inhale fumes from chemicals. Use adequate ventilation, and return caps to bottles immediately after use.
- Check regularly for chemical spills or leaks. Follow SDS recommendations for cleaning up spills or leaks.

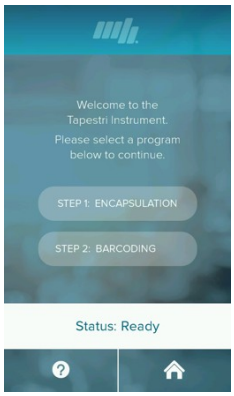
DISPOSAL OF PRODUCTS

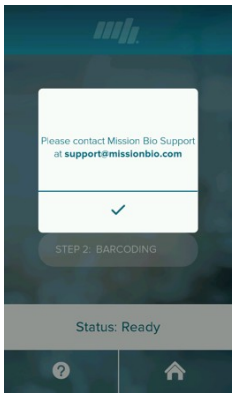
- Used DNA Cartridges should be handled and disposed of in accordance with federal, state, regional, and local laws for hazardous waste management and disposal.
- Do not dispose used DNA Cartridges in unsorted municipal waste. This equipment may contain hazardous substances that could affect health and the environment. Use appropriate take-back systems when disposing of materials and equipment.

C. Help Pages

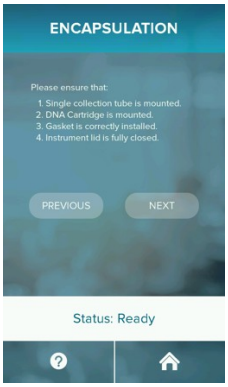
Below are all **HELP** pages (right) associated with their corresponding protocol steps (left) including Encapsulation, Priming, and Barcoding are shown below.

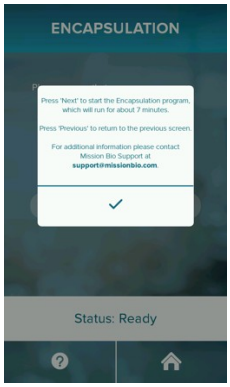
Home Screen



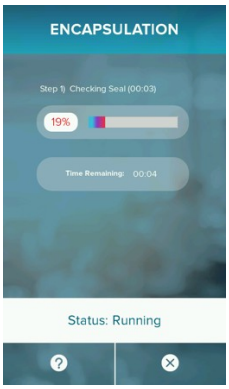


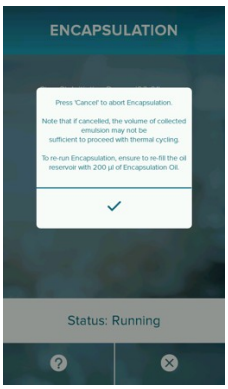
Encapsulation Screen (Start)



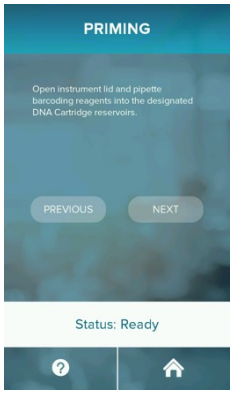


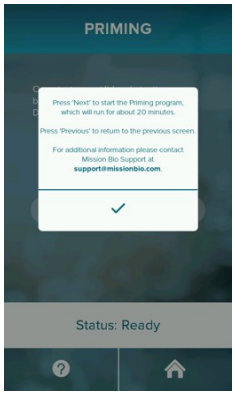
Encapsulation Screen (Running)



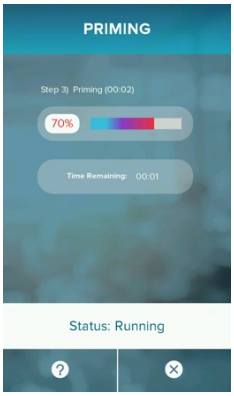


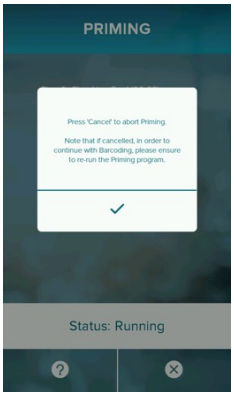
Priming Screen (Start)



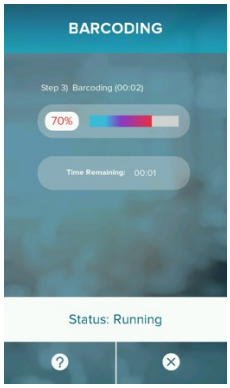


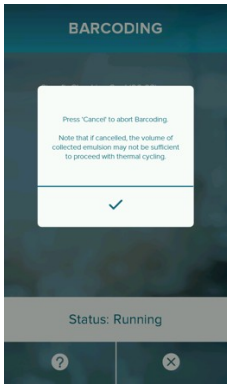
Priming Screen (Running)





Barcoding Screen (Running)





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Visit www.missionbio.com for additional support.