USER REFERENCE MANUAL

CellPore™ Transfection System

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Safety Information and Warnings

CellPore™ Transfection System (Catalog #100-0946) must be operated by trained professionals and is intended for research use only (RUO). CellPore™ Transfection System and its applications are not intended for human or animal diagnostic or therapeutic uses.

CellPore™ Transfection System should be placed on a clean, flat surface free of any foreign objects or debris and insulated from excessive vibration. There should be at least 13 mm of clearance on each side of the instrument to ensure adequate cooling.

All electrical devices pose a risk of electric shock. To reduce this risk, do not open any covers that are fastened with screws. While CellPore™ Transfection System is designed to withstand spills, do not allow fluids to enter the interior of the instrument. In the event of such a spill, switch off CellPore™ Transfection System and disconnect the power cable before cleaning.

Operate CellPore™ Transfection System at 15 - 30°C, in an environment with a relative humidity of 20 - 85% and at an altitude of 0 - 2000 m above sea level. CellPore™ Transfection System should be used indoors only.

CellPore™ Transfection System is designed to maintain sample sterility when operated inside a Class II biosafety cabinet (BSC). It is essential to observe good laboratory practices when operating the instrument and associated reagents and consumables as described by your institution. Verify the power outlet of the BSC before use. CellPore™ Transfection System is not specified for use inside an incubator or cold room. Protect the instrument against dust and moisture. Do not exert excess pressure or use sharp objects on the touchscreen. It is not recommended to use UV light lamps for prolonged periods of time, as exposure to UV light will result in discoloration of external CellPore™ Transfection System components over time.

CellPore™ Transfection System weighs 13 kg (29 lb) without the gas cylinder installed. Exercise caution when moving the instrument.

CellPore™ Transfection System complies with Part 15 of the US-FCC rules. Operation is subject to the following two conditions: (1) CellPore™ Transfection System may not cause harmful interference, and (2) CellPore™ Transfection System must accept any interference received, including interference that may cause undesired operation.

In case of a malfunction, call STEMCELL Technologies Inc. for service. Servicing performed by anyone other than an authorized STEMCELL Technologies representative will void the warranty associated with CellPore™ Transfection System. There are no user-serviceable parts inside the instrument, and the outer enclosure should never be opened.

CellPore™ Transfection System is manufactured and distributed by STEMCELL Technologies Inc., 1618 Station Street, Vancouver BC, Canada V6A 1B6. Call 1-604-877-0713 or toll-free 1-800-667-0322 within North America.

STEMCELL Technologies Inc. is not responsible for any injury or damage caused by the use of this instrument for purposes other than those for which it is intended, or by modifications of the instrument or software not performed by an authorized STEMCELL Technologies representative.

Overview of Safety Symbols

The CAUTION symbol indicates where the operator must follow instructions to avoid personal injury and damage to the instrument.

The BIOHAZARD symbol indicates that special care is required to remain protected from biological hazard.

The PINCH HAZARD symbol indicates that special care is required to remain protected from pinch hazards during regular use. The operator must follow instructions and training to void inherent hazards in the system.

Always connect the power supply to a 3-prong, grounded AC outlet rated 2A 100 - 240 V using the AC power cord provided with CellPore™ Transfection System. Do not use a power cord that is not rated to 2A 100 - 240V. Do not use an adapter to a two-terminal outlet. Before plugging the instrument in, be sure that two FB 2A 250 V~ fuses are installed. Ensure that there is adequate space at the back of the instrument to allow removal of power cord from the system.

Only air cylinders or accessories recommended by STEMCELL should be used within the system. Other gas cylinder models and gas types cannot be substituted for use. Flammable gasses cannot be substituted for use in the system.

STEMCELL Technologies Inc. shall disclaim all warranties and in no event be liable for any kind of damages caused by or arising out of any operation of CellPore™ Transfection System in a manner that contravenes the safety and handling instructions outlined in this entire document.

1.0 Introduction

1.1 CellPore™ Mechanoporation Technology

CellPore™ Transfection System is a laboratory instrument that enables intracellular delivery of cargo to mammalian cells. The system relies on a mechanism of controlled cell deformation within microfluidic channels under specific flow conditions, using compressed gas. Mechanoporation creates transient disruptions in the plasma membrane that enable direct cargo entry into the cytosol in a gentle fashion (Figure 1).

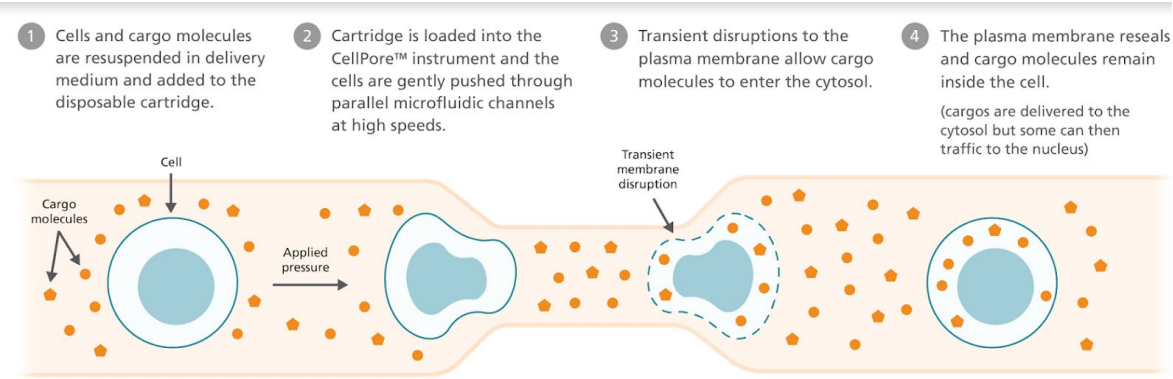


Figure 1. Technology Overview

1.2 How It Works

CellPore™ comprises two components, CellPore™ Transfection System that outputs a user-specified delivery pressure (from a compressed gas cylinder) and CellPore™ Transfection Kits that contain optimized delivery reagents and cartridges that enable intracellular delivery of molecules to specific cell types. CellPore™ offers high cytosolic delivery flexibility of a range of molecules to the same cell type of interest for use in a variety of cell and gene-based applications.

2.0 CellPore™ Transfection Kit

2.1 Kit Overview

Each CellPore™ Transfection Kit is sold with a set of optimized reagents and CellPore™ Delivery Cartridges that are designed to be compatible with specific cell types. For details on the reagent contents and cell type compatibility for use with CellPore™ Transfection System, refer to the applicable CellPore™ Transfection Kit Product Information Sheet (PIS), available at www.stemcell.com, or contact us to request a copy.

CellPore™ Delivery Cartridges can accommodate sample volumes of 20 - 200 µL. Refer to the appropriate CellPore™ Transfection Kit PIS for specific sample volume recommendations for your application of interest. Each single-use CellPore™ Delivery Cartridge comprises two main components: A) a **Cartridge Insert** and B) a **Collection Tube** (Figure 2).

Note: Cartridges are provided pre-assembled and sterilized for immediate use.

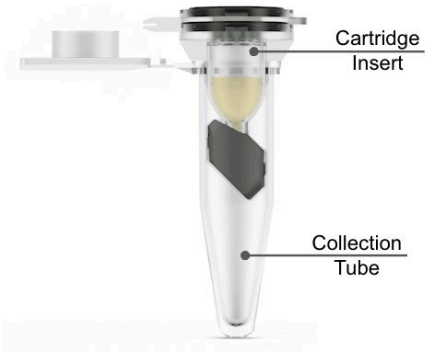


Figure 2. CellPore™ Delivery Cartridge

3.0 CellPore™ Transfection System

3.1 Instrument Overview and Components

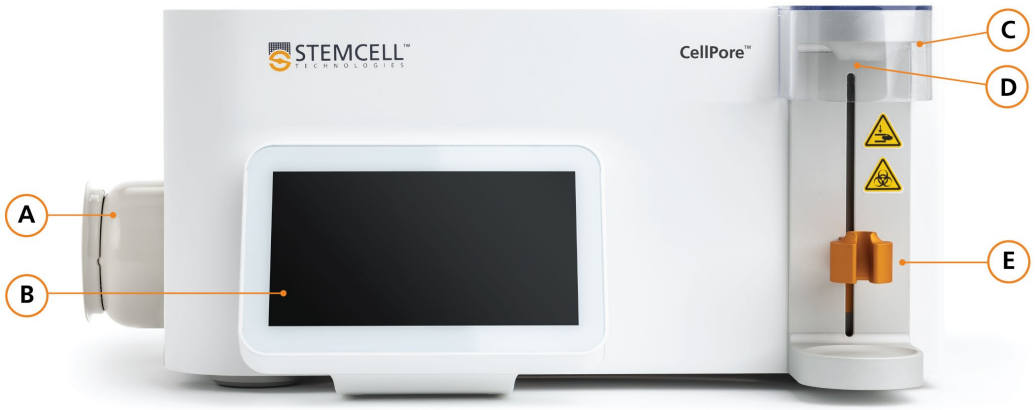
CellPore™ Transfection System is an instrument that comprises three main components, operated under software control (Figure 3):

- Cartridge Holder
- Safety Shield
- Compressed Gas (left side port)

With these systems in place, CellPore™ Transfection System performs the following actions to enable cytosolic cargo delivery to compatible cell types:

- Handling of CellPore™ Delivery Cartridges
- Dispensing of appropriate gas pressure for specific time duration
- Tracking of delivery parameters and user safety during operation

CellPore™ Transfection System provides automated or user-controlled cargo delivery operations to provide an adequate amount of experimental flexibility to users.



A. Gas Cylinder (not included with the instrument)
B. Touch Screen Monitor
C. Safety Shield
D. Pressure Nozzle
E. Cartridge Holder

Figure 3. Front View of CellPore™ Transfection System

3.1.1 Cartridge Holder and Safety Shield

The Cartridge Holder (Figure 4) moves vertically from its lowered resting position to its raised operating position. The unique C-shape of the arm allows users to easily load and remove the single-use CellPore™ Delivery Cartridge while maintaining good visualization of the delivery process when operating the instrument.

Figure 4. Cartridge Holder

A clear Safety Shield (Figure 5A) covering the pressure nozzle (Figure 5B) is required for proper instrument operation. This safety device is designed to halt the movement of the Cartridge Holder in the event of a safety risk (e.g. pinch hazard between the Cartridge Holder and the Pressure Nozzle) or obstacle (e.g. improper placement of CellPore™ Delivery Cartridge). If this occurs, the user may correct the situation, reposition the Safety Shield (section 4.2), and restart the run.

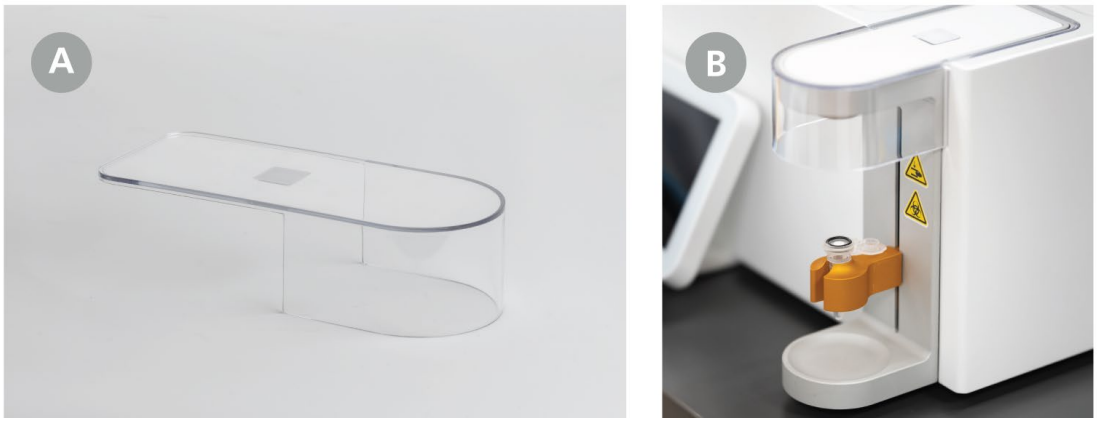


Figure 5. (A) Safety Shield and (B) Proper Installed Position Covering the Pressure Nozzle

3.1.2 Compressed Gas

CellPore™ Transfection System requires compressed gas for proper function. The instrument is designed to operate with Nitrogen or Zero-Air calibration gas cylinders with a universal C10 adapter (Figure 6). For a list of recommended third-party suppliers, visit www.stemcell.com/cellpore-gascylinders.

WARNING: Only Nitrogen or Zero-Air gas should be used. Do not use flammable gas or carbon dioxide with CellPore™ Transfection System.

Figure 6. Gas Cylinder for Use with CellPore™ Transfection System. Approximate dimensions are 13” x 3” (330 x 76 mm).

3.1.3 Power, Network, and USB Device Connection

A. Ethernet Port
B. USB Port
C. Power Switch
D. Power Supply Socket
E. Fuse Box

Figure 7. Back View of CellPore™ Transfection System

Note: CellPore™ Transfection System does not currently support network connectivity.

3.2 User Interface

The CellPore™ Transfection System user interface has four main components (Figure 8):

- Control Bar that offers multiple functions for selecting/adjusting/controlling the system (section 3.2.1)
- Experiments tab for editing and running samples (section 5.3)
- History tab for list of performed experiments and data export capabilities (section 7.0)
- System Information & Service tab that provides additional context and controls (e.g. software updates) (section 3.2.2)

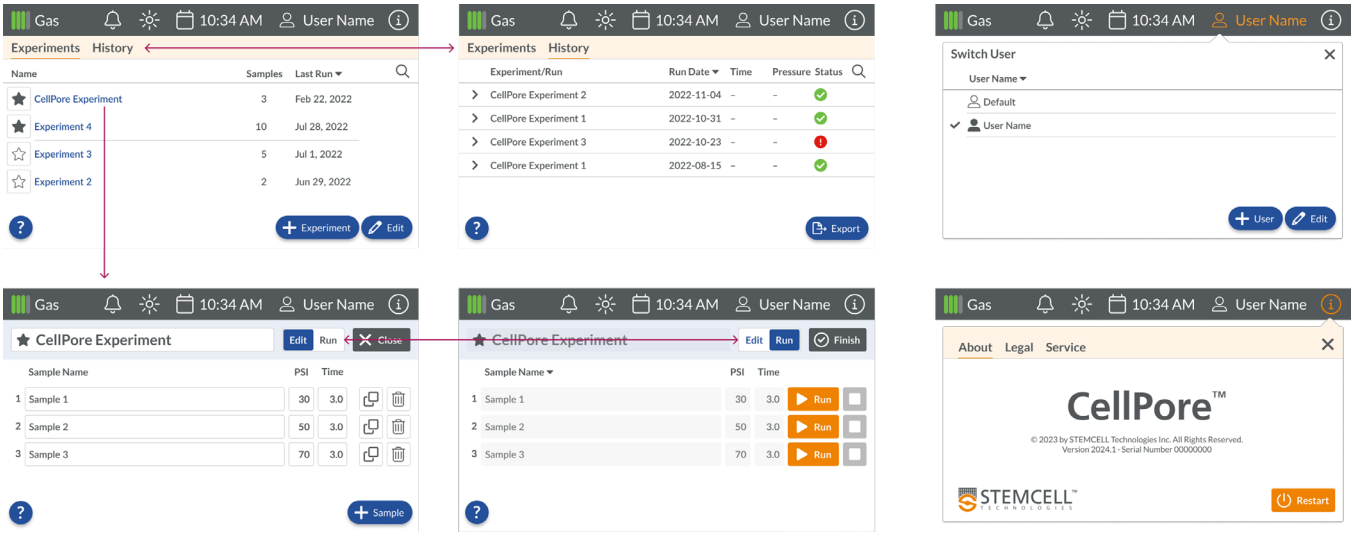


Figure 8. Main Components of the User Interface

3.2.1 Control Bar

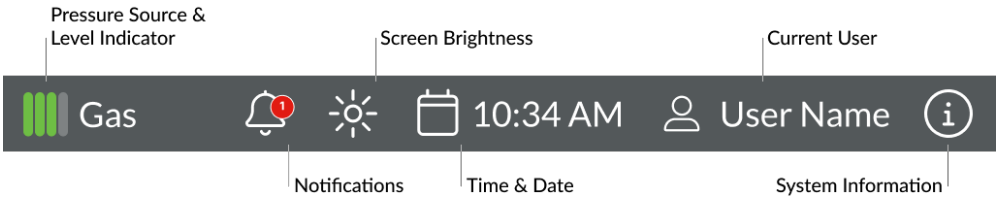


Figure 9. Control Bar

The Pressure Source & Level Indicator, located on the left-hand side of the Control Bar (Figure 9), visually displays the approximate pressure remaining in the installed gas cylinder.

The [Arrow] indicates the selection of an **external** compressed gas cylinder (Figure 10). For information on attaching CellPore™ Transfection System to an external gas supply, contact STEMCELL Technologies Technical Support.

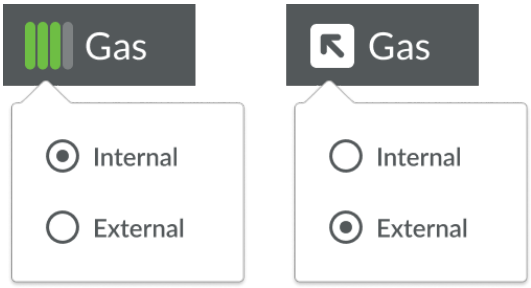


Figure 10. Pressure Level Indicator Icons

Tap [Notifications] to display relevant information (Figure 11). This icon indicates the number of unacknowledged notifications for the user.

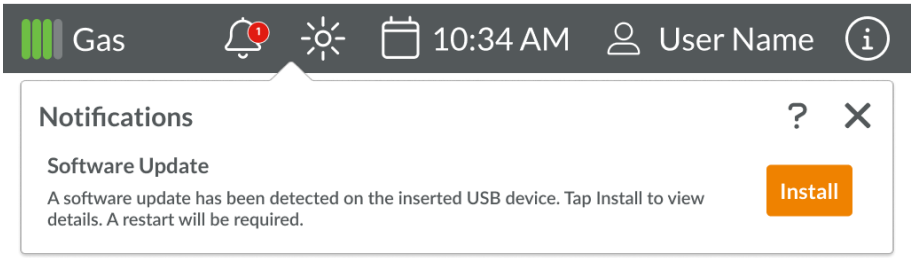


Figure 11. Notifications Icon

Tap [Screen Brightness] to display a menu for adjusting the screen brightness (Figure 12). When the screen is at maximum or minimum brightness, the **+** or **–** button will be greyed out. This feature can be useful when working with light-sensitive materials.

Figure 12. Screen Brightness Icon. Use the **+** and **–** buttons to adjust.

Tap [Calendar] to change the date and time (Figure 13). Tap the year, month, day, hours, or minutes and use the up and down arrows to adjust the values as desired. Once the values are correct, tap “Update and Restart” for changes to take effect. The CellPore™ Transfection System will restart at this time.

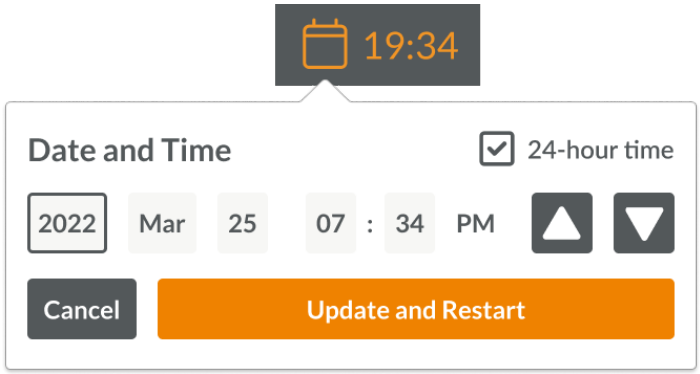


Figure 13. Calendar Icon and Date and Time Adjustment Menu

Switch users by tapping [User] in the Control Bar (Figure 14).

CellPore™ Transfection System includes a “Default” account that cannot be deleted. Users cannot be switched while an Experiment is in progress.

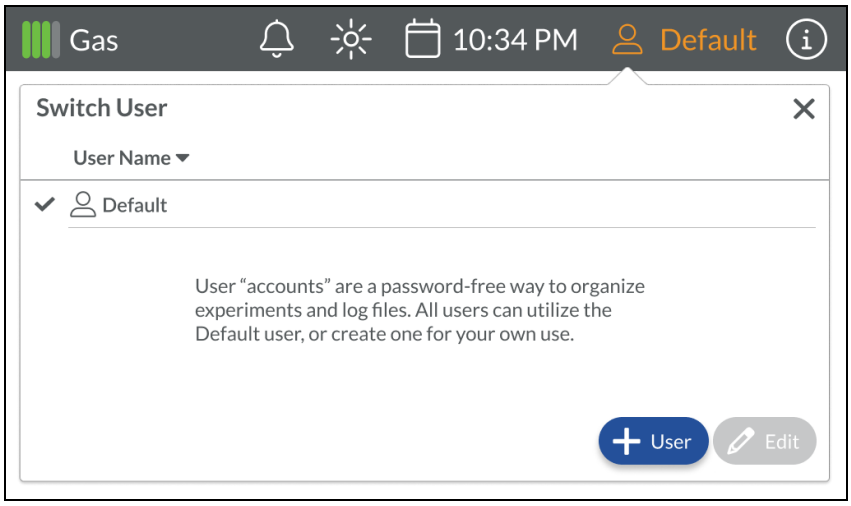


Figure 14. User Profiles Icon

3.2.2 Information and Service

Tap [Information] to find additional information about your CellPore™ Transfection System, view Terms and Conditions of Sale, and perform service-related tasks, such as software updates or exporting diagnostic log files (Figure 15).

Figure 15. CellPore™ Information and Service Tab

From the Service tab, users can update their software (section 11.0), export diagnostic log information (section 10.1), or delete user data (Figure 16).

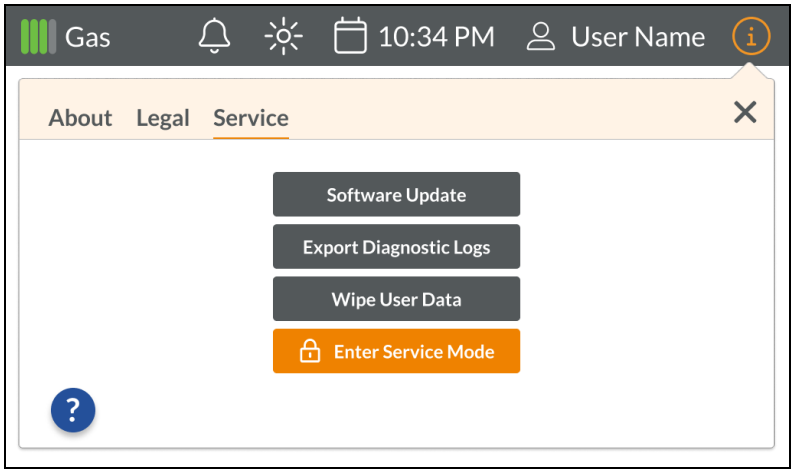


Figure 16. Service Tab

Note: "Enter Service Mode" requires a passcode and should only be accessed with the help of STEMCELL Technologies Technical Support. Refer to the Troubleshooting section (section 10.0) for further guidance if CellPore™ Transfection System does not provide expected results.

3.3 System Icons

Icons used in CellPore™ Transfection System are described below.

Table 1. System Icons

ICON	DESCRIPTION
CONTROL BAR	
	Displays the approximate level remaining air pressure from the installed gas cylinder
	System notifications
	Adjust screen brightness
	Set date and time
	Current user account indicator
	System information (About, Legal, and Service)
EXPERIMENTS HOME	
	Experiment not in Bookmarks
	Bookmarked experiment
EDIT EXPERIMENTS	
	Duplicate a sample
	Delete a sample
USER ACCOUNTS	
	Default user account
	User account
	Current user

ICON	DESCRIPTION
RUN EXPERIMENTS	
	Manual mode
	Start the run
	Pause a run in progress
	Run in progress indicator
	Abort the run
	Finish the run (in manual mode)
	Re-run a sample
	Finish and close experiment
HISTORY	
	Collapsed history item
	Expanded history item
	Run completed successfully
	Run completed with error
	Export

ICON	DESCRIPTION
COMMON	
	Find experiment or history entry
	Experiment or History list currently filtered by search criteria
	Help
	Create or add function
	Edit
	Close view
	Clear field
	Scroll down
	Scroll up

4.0 CellPore™ System Installation

Successful operation of CellPore™ Transfection System requires correct installation. The steps described below will guide the user through proper installation. For help with the installation process, contact STEMCELL Technologies Technical Support.

4.1 Placement of the Instrument

CellPore™ Transfection System should be placed on a clean, flat surface free of any foreign objects or debris and insulated from excessive vibration. There should be at least 13 mm of clearance on each side of the instrument to ensure adequate cooling. To enable emergency power disconnection, access to the power cord should not be obstructed. It is recommended to operate the system within a Class II biosafety cabinet (BSC).

CellPore™ Transfection System is not specified for use inside an incubator or cold (2 - 8°C) room.

IMPORTANT: Ensure that the power outlet of the BSC is a 3-prong, grounded AC outlet rated to a minimum of 2A 100 - 240 V.

4.2 Installing the Safety Shield

The Safety Shield must be installed prior to running the instrument for proper operation. Slide the clear safety device to cover the nozzle, taking care to align the ridge with the groove for proper placement (Figure 17).

IMPORTANT: The absence or improper placement of the Safety Shield will prevent CellPore™ Transfection System from running normally.

Figure 17. Incorrect (left) and Correct (right) Installation of the Safety Shield

4.3 Installing the Gas Supply

Adequate supply of dry, oil-free nitrogen or zero-grade air must be installed for operating the instrument. Refer to http://www.stemcell.com/cellpore-gascylinders for ordering details of compatible compressed gas cylinders.

Remove the protective cap from the gas cylinder (if present). Insert the cylinder into CellPore™ Transfection System via the gas access port located on the lower left side of the instrument (Figure 18). Once fully inserted, turn the cylinder clockwise to fully screw in and engage the valve; screw in a clockwise direction until the cylinder is unable to rotate any further.

IMPORTANT: An improperly installed gas cylinder may result in an air leak and decrease of the useable life of the gas cylinder. Gas cylinders should only be installed when the system is turned off. Care must be taken when installing the cylinder; do not use excessive force to screw the gas cylinder in order to prevent damage to the instrument. Note that several turns will be required to fully install the cylinder. A small hissing sound may be heard during this process as the gas cylinder engages with the instrument.

The gas cylinder should only be uninstalled when the system is turned off. Do not attempt to remove the cylinder while the system is powered on or during a sample run. To remove the gas cylinder, unscrew counter-clockwise until it can be pulled out of CellPore™ Transfection System. A small hissing sound may be heard as the gas cylinder disengages from the instrument.

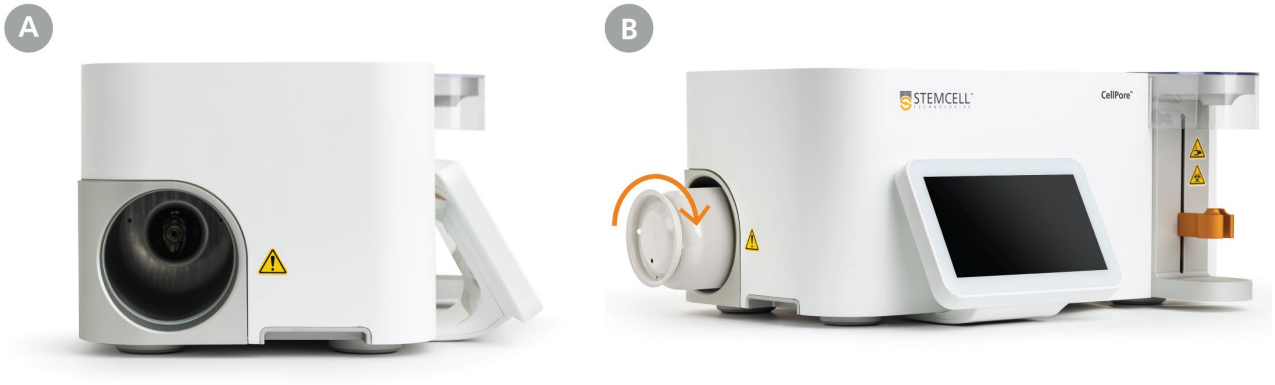


Figure 18. (A) Gas Cylinder Access Port and (B) Gas Cylinder Installation On-Board CellPore™ Transfection System

4.4 Power Connections

Ensure the AC power switch located in the back of the instrument is in the OFF position (Figure 7). Connect the power cord provided with CellPore™ Transfection System to the AC inlet located on the back of the instrument and to the electrical outlet of the BSC.

IMPORTANT: For your safety, do not use an adapter to connect the instrument. Ensure that the total electrical load of plugged-in equipment does not exceed the manufacturer rated limit of the outlet.

4.5 Startup

1. Turn ON the power switch located on the back of the instrument.

   Note: If CellPore™ Transfection System is connected to the electrical outlet within a BSC, ensure the power outlet(s) are energized via the BSC control panel.

2. CellPore™ Transfection System displays a progress screen while the system is starting (Figure 19). During this time the screen may flicker; this is part of the normal startup sequence. Wait until the startup sequence is complete.

Figure 19. Startup Screen

3. When CellPore™ Transfection System is started for the first time, or a new user profile is created, the Terms and Conditions of Sale are displayed (Figure 20). Read the agreement in full by scrolling to the end. Tap “Agree” to proceed.

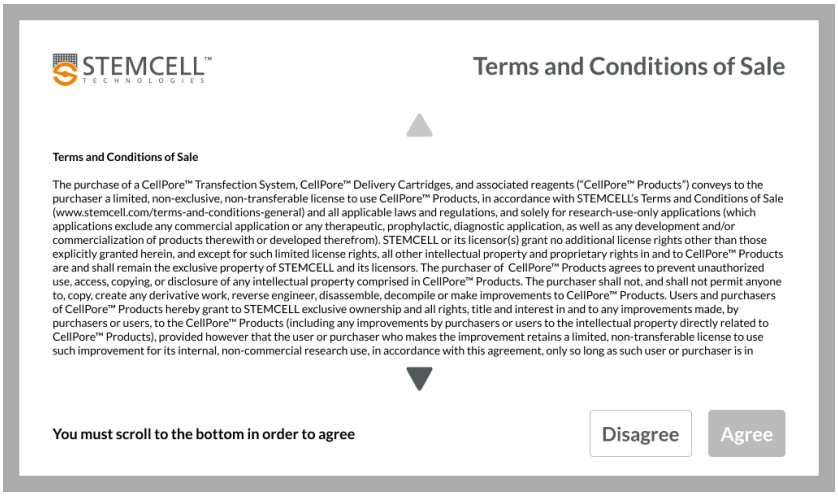


Figure 20. Terms and Conditions of Sale

4.6 Shutdown

CellPore™ Transfection System may be shut down by turning the power switch (located at the back of the instrument) to the OFF position (Figure 7).

Note: Wait 30 seconds after shutting off power to CellPore™ Transfection System before attempting to turn ON again. This ensures enough time to de-energize all electrical components.

5.0 Workflow for Running CellPore™

5.1 Workflow Overview

The following section describes the various features and steps required to operate CellPore™ Transfection System. The details of each are described in the sections below.

In general, users will follow the workflow below (Figure 21) into order to execute an experiment:

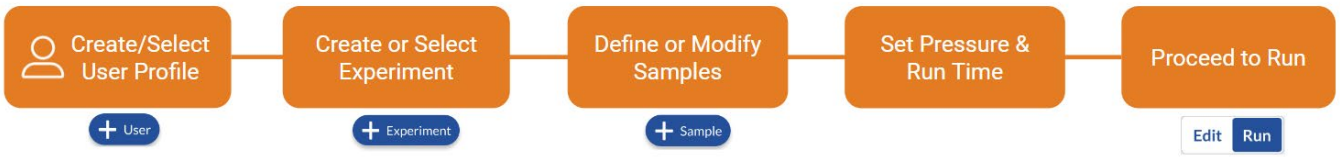


Figure 21. CellPore™ Workflow

5.2 User Profiles

User Profiles are provided as a convenience to organize experiments (section 5.3) and run history (section 7.0) for each CellPore™ Transfection System user (Figure 22). There is no limit to the number of User Profiles that can be created. Creating a new User Profile is not required to operate the instrument.

Note: User Profiles are not password protected. A "Default" User Profile comes pre-installed and may be immediately used. However, the "Default" User Profile name cannot be edited nor removed.

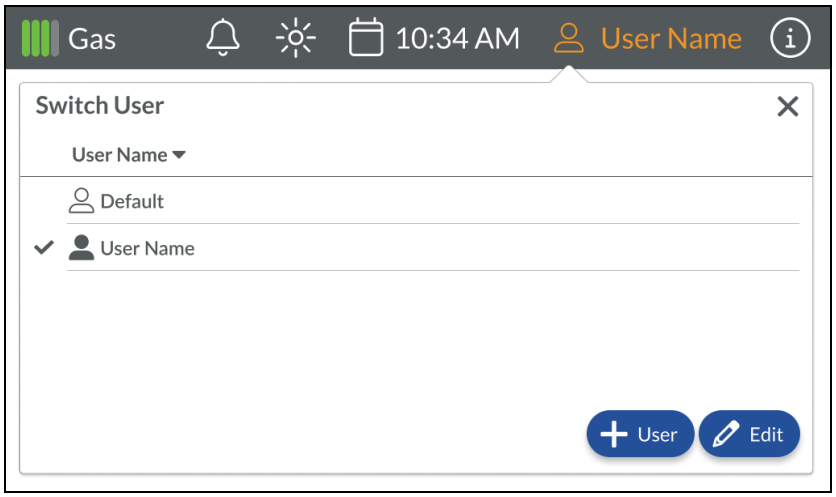


Figure 22. User Profiles Menu

5.2.1 Creating a New User Profile

1. Tap [User] on the Control Bar to open the User Profile List.
2. Tap + User to create a new User Profile.
3. Use the on-screen keyboard to input the User Profile name. Tap Save when finished.
   Note: Profile names have no character limit. However, only the first 17 characters will be displayed on the Control Bar.
4. Review and accept the Terms and Conditions of Sale (Figure 20) to proceed with the creation of a new User Profile.
5. Proceed to section 5.3 to create a new Experiment.

5.2.2 Selecting a User Profile

1. Tap [User] on the Control Bar to open the User Profile List.
2. Select the desired User Profile from the list.
3. The list of Experiments under the selected User Profile will be displayed.
   Note: A different User Profile cannot be selected while an experiment is in progress.

5.2.3 Renaming a User Profile

1. Tap [User] on the Control Bar to open the User Profile List.
2. Tap Edit to enter the Edit Profile mode.
3. Tap [Edit] next to the desired profile name to be edited.
4. Edit the profile name using the on-screen keyboard. Tap Save to confirm.
5. Tap Done when finished to return to the profile selection list.

5.2.4 Deleting a User Profile

1. Tap [User] on the Control Bar to open the User Profile List.
2. Tap Edit to enter the Edit Profile mode.
3. Choose one of the following:
   a. Move the User Profile data to the “Default” profile
   b. Permanently delete the User Profile data
4. Tap Done when finished to return to the profile selection list.

5.3 Experiments and Samples

CellPore™ Experiments comprise a set of one or more samples (section 6.2) that will be run according to the assigned delivery pressure and time parameters.

Experiments may be newly created or duplicated from a previous experiment that was saved by the user. The Experiments tab on the Home Screen lists all the existing experiments for the current user (Figure 23). Tap the “Name”, “Samples”, or “Last Run” headers to sort the list of experiments by that category. The sort order can also be reversed by tapping the header a second time.

Note: CellPore™ Transfection System comes with a ready-to-use, pre-defined experiment template in the “Default” account. This Starter Experiment contains one sample and demonstrates how to set up an Experiment. Users may edit or delete this experiment template.

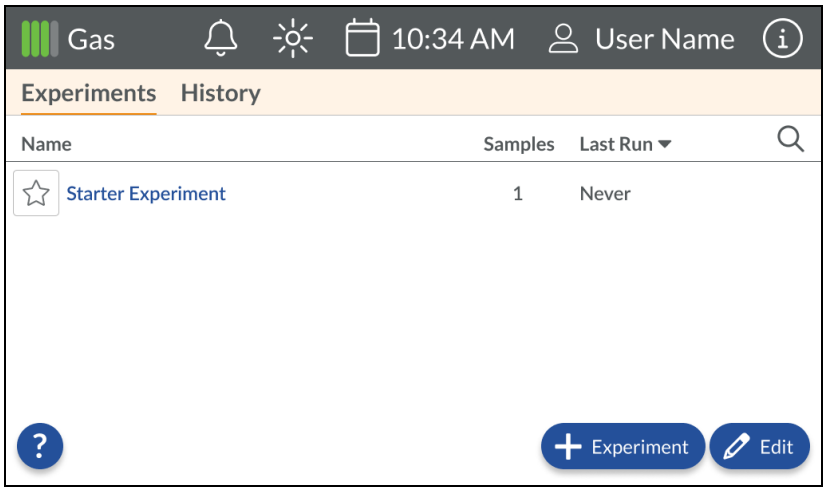


Figure 23. User Experiments Menu

5.3.1 Create a New Experiment

1. Tap + Experiment .
2. A new experiment is created and opened under Edit mode. It also contains one sample with the pressure parameter set to 5 pounds per square inch (psi) and time parameter set to 0 seconds (Figure 24). Refer to section 5.4 for details on setting these parameters.
3. (Optional) Rename the experiment and/or sample name by tapping on the text bar and using the on-screen keyboard. Tap Save to confirm.
4. Define new samples by tapping + Sample .

   Note: Samples may be duplicated or deleted by using the appropriate functions as indicated in Figure 24. For more information on the use of these functions, refer to section 5.3.2.
5. Tap Close to return to the Experiments List.

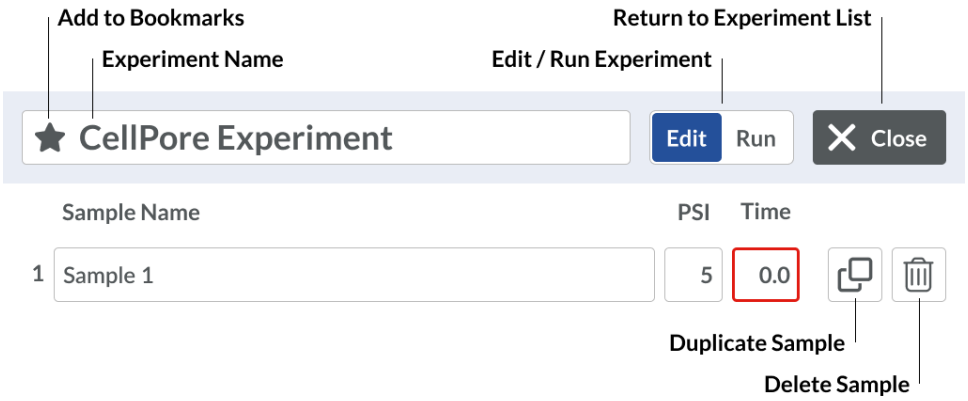


Figure 24. Experiment Setup Screen. Newly created experiments are generated with one sample that must be defined with both a pressure (PSI) and a run time (Time). Tap the text fields to edit.

5.3.2 Modifying an Existing Experiment

Select the desired experiment by tapping on the appropriate line of the list in the Experiments tab. This opens the selected experiment in Edit mode (Figure 25).

Users can modify the Experiment, including the experiment name, sample names, pressure and run time parameters by tapping on the relevant text field. Use the on-screen keyboard to make the changes.

Note: Changes to the names, pressure, and time parameters are automatically saved and will overwrite the original version. Refer to section 5.3.3 for details on duplicating entire experiments.

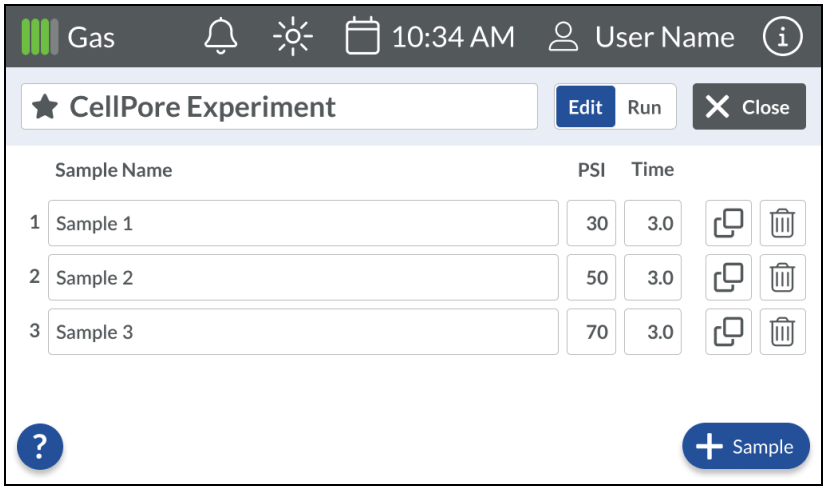


Figure 25. Modifying an Existing Experiment. Experiments that are recalled display the list of samples that were previously defined.

Samples may be duplicated or deleted. To duplicate a sample, tap [Duplicate] on the relevant list item. The duplicated item will be added to the bottom of the sample list. Users can then proceed to edit the sample name, pressure, and/or time parameter as described above.

To remove a sample from the list, tap [Delete] on a sample. A prompt will appear to confirm the deletion.

5.3.3 Duplicating or Deleting Experiments

Users can define a new Experiment by duplicating a previously saved version. This feature may be useful to users wanting to make minor changes to the sample list while preserving the original version.

Alternatively, some users may wish to remove Experiments from the list. This feature may be used to organize the Experiments List and remove unwanted or unused experiment definitions.

Note: Information from all previous runs of a deleted Experiment is retained in the History for the user (section 7.0).

1. Tap Edit.
2. The Experiments List displays [Duplicate] and [Delete] icons for each item, next to the “Last Run” date (Figure 26).

Figure 26. Duplicate or Delete Experiment

3. Tap [Duplicate] to make a copy of that experiment (including all sample names within it). It will be added to the bottom of the Experiments List.
4. Tap [Delete] to remove that experiment from the list. A prompt will appear to confirm the deletion. Tap "DELETE" to remove it.
5. When finished, tap Done to return to the Experiments List selection.

5.3.4 Bookmarking an Experiment

Users can bookmark experiments that are routinely used to the top of the Experiments List for easy access. This feature can be useful for repeating Pressure Sweep experiments or for user-programmed quick runs.

Experiment bookmarks may be added or removed in two locations:

On the Experiments List screen (Figure 27):

1. Tap [Favorite] next to the desired experiment in the list.
2. The chosen experiment will be moved to the top of the list with a solid star icon.

   Note: Tapping will remove the bookmark and move the experiment back to the main list.

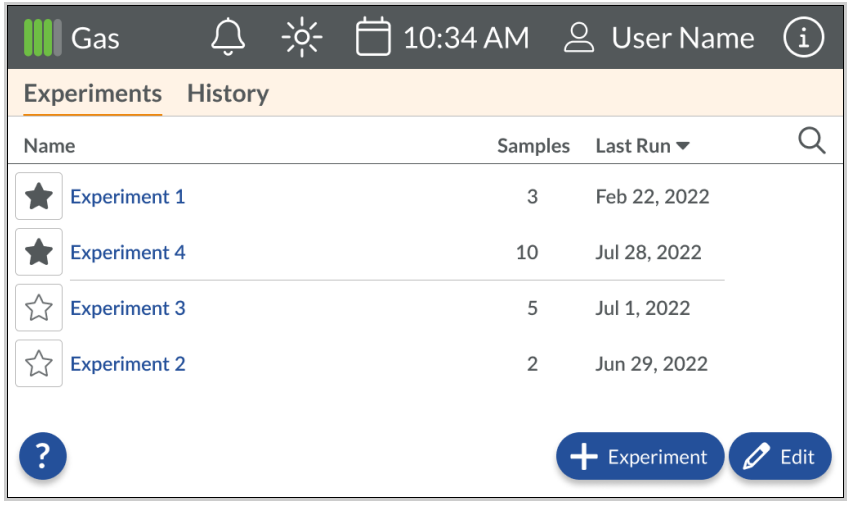


Figure 27. Bookmarking an Experiment in the Experiments List

On the Experiment Edit screen (Figure 28):

1. Tap [Favorite] next to the experiment name. A solid star icon confirms the bookmark.
2. Tap Close to return to the Experiments List.

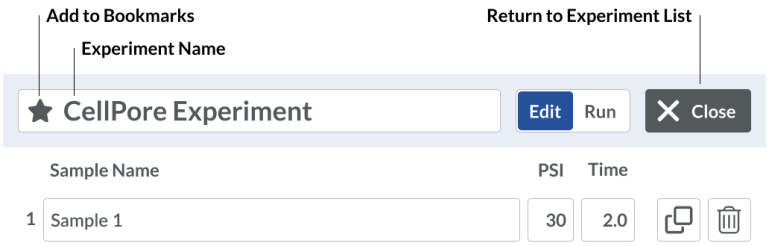


Figure 28. Bookmarking an Experiment in Experiment Edit Screen

5.3.5 Searching the Experiments List

1. Tap [Find] at the top right of the Experiments List (Figure 29).

Figure 29. Searching the Experiments List

2. Select options to narrow the search. Day and experiment/sample name can be used simultaneously if desired (Figure 30).
    a. Select “All”, “Today”, or “Yesterday” to display experiments only from those time periods.
    b. Select “Specific Date”, then select the year, month, and day using the increment and decrement icons. The list will include any experiments from the specified day.
    c. Enter text in the “Experiment or sample name contains” field to display matching experiments.
3. The [Find] icon changes color to indicate that the Experiments List is displaying the search results.
4. To return to displaying all Experiments, tap [Find] again and ensure these two conditions are met:
    a. Select “All” from the search options (Figure 30).
    b. Remove any text from the search field “Experiment or sample name contains field”.

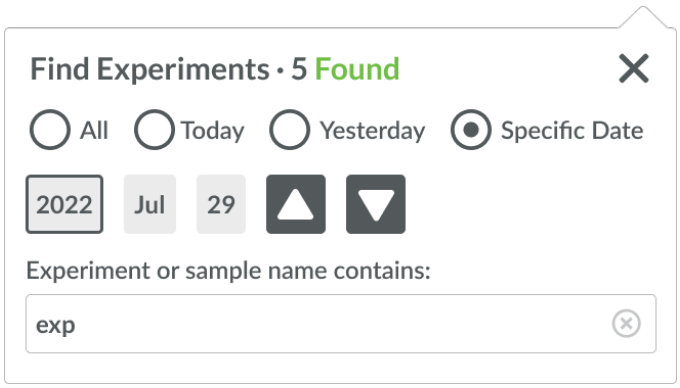


Figure 30. Searching the Experiments List

5.4 Defining Sample Pressure and Run Time

Each sample within an experiment is defined by a name, pressure, and run time parameters (Figure 31). Both the sample pressure parameter and run time must be defined to proceed with the run.

Figure 31. Samples are Defined by a Sample Name, Pressure Parameter, and Run Time/Mode

5.4.1 Defining the Pressure

CellPore™ Transfection System is designed to apply a specific pressure to the CellPore™ Delivery Cartridge. This enables the sample to pass through the Cartridge at a defined speed to enable intracellular cargo delivery. Higher pressures typically result in higher efficiency of cargo delivery at the cost of cell viability. Conversely, lower pressures safeguard cell viability at the expense of cargo delivery efficiency. Thus, optimization of the delivery pressure is important.

1. Input the pressure parameter for a sample by tapping on the text box and using the numeric keypad.

   Note: Pressures can be set between 5 and 120 psi for each sample

2. Repeat the above for each remaining sample.

Note: For application-specific pressure recommendations, refer to the applicable CellPore™ Transfection Kit PIS, available at www.stemcell.com, or contact us to request a copy.

5.4.2 Defining the Run Time/Mode

When running samples at a defined pressure, the duration of pressure being applied must be long enough to ensure the sample has fully passed through the Cartridge into the Collection Tube (Figure 2). This duration will vary for different cell types and reaction volumes.

Note: For additional details on cell type-specific run times, refer to the applicable CellPore™ Transfection Kit PIS.

1. Input the run time parameter for a sample by tapping on the text box and using the numeric keypad (Figure 32) to define the time (in seconds). Tap anywhere outside the keypad to dismiss it.

   Note: Run times can be set between 1 and 99 seconds. Samples are typically processed within 10 seconds; however, highly concentrated samples run at low pressures may require a longer run time.
2. Repeat for each remaining sample.

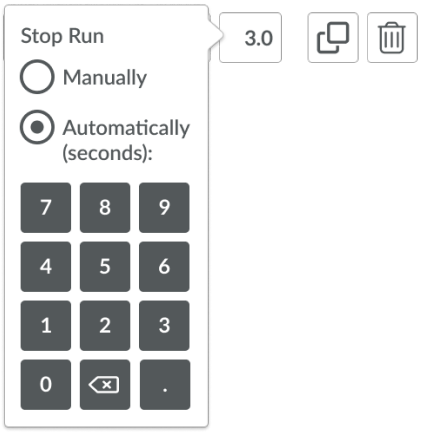


Figure 32. Numeric Keypad to Define the Sample Run Time. In this mode, the system automates the run by applying a pre-defined pressure duration for each sample.

Alternatively, users may choose to run their first few samples manually in order to control the pressure duration. In this case, manual controls can be accessed via the keypad described above.

1. Tap on the sample Run Time text field to bring up the keypad.
2. Tap on “Manually” to manually input the sample run time. The text field will change to a [Stopwatch] icon to indicate a Manual sample run (Figure 33).
3. Tap anywhere outside the keypad to dismiss it.
4. Repeat steps 1 - 3 for remaining samples.

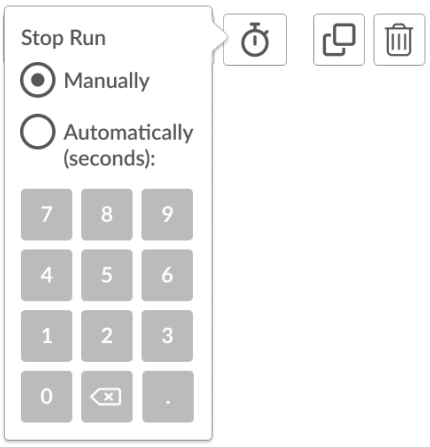


Figure 33. Manual Sample Run Mode

IMPORTANT: In this mode, the system will continue to apply air pressure to the cartridge until the user intervenes to stop the flow of air.

6.0 Running an Experiment

6.1 Preparing a Sample

For complete sample preparation instructions, refer to the applicable CellPore™ Transfection Kit PIS, available at www.stemcell.com, or contact us to request a copy.

Note: CellPore™ Transfection System is designed to run one single-use CellPore™ Delivery Cartridge at a time. However, users may pre-program sequential sample runs for their experiment.

6.2 Selecting and Setting up an Experiment to Run

1. Select the appropriate [User] from the Control Bar. This displays the Experiments List for the chosen User Profile.
2. From the Experiments List, choose the desired Experiment to be run by tapping its name (Figure 23).
3. The Experiment opens in Edit mode; review the Sample Name list and parameters for accuracy (Figure 25).

   Note: For more information on modifying samples, refer to section 5.3.2. For specific parameter recommendations, refer to the applicable CellPore™ Transfection Kit PIS.

4. Tap Edit Run [Run] (Figure 34). The screen displays the Run controls for each Sample of the Experiment.

   Note: If you are unable to enter Run mode, ensure all sample pressure parameters are set within the 5 - 120 psi range, and a run time or mode is defined.

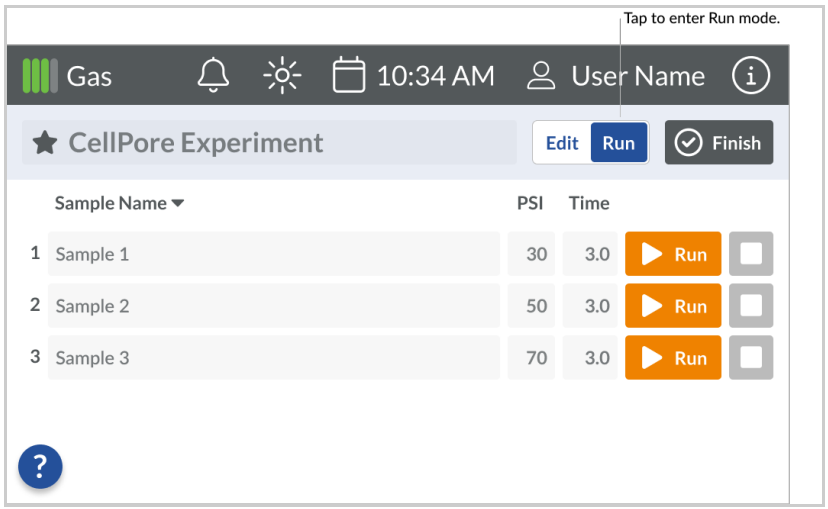


Figure 34. Experiment Run Screen. Run controls are provided for each defined sample.

6.3 Loading CellPore™ Delivery Cartridge

1. Ensure that the sample is correctly pipetted inside CellPore™ Delivery Cartridge by fully inserting the pipette tip and dispensing the appropriate volume at the bottom of the Cartridge insert, as directed in the applicable CellPore™ Transfection Kit PIS.
2. Close the lid of CellPore™ Delivery Cartridge and ensure that it is inserted into the Collection Tube.
3. Insert the Cartridge into the Cartridge Holder of CellPore™ Transfection System (Figure 35).

Note: The arrow on the lid indicates the direction of fluid flow. This provides the ability to observe the sample during the run as it is collected into the Collection Tube. Smaller sample volumes may collect on the side of the collection tube. Gently tap down to collect the full volume at the bottom of the collection tube, or spin for a few seconds in a mini centrifuge.

Figure 35. (A) Proper Placement of CellPore™ Delivery Cartridge in the Cartridge Holder of CellPore™ Transfection System. (B) Direction of Sample Flow Exiting the Cartridge.

6.4 Running a Sample

Users may choose to run a sample either manually, or for a pre-defined amount of time. Refer to section 5.4.2 for further details on defining the sample run time or mode.

6.4.1 Automatic Mode (default)

Users may pre-define a time for the run duration for their samples. This mode simplifies sample runs to a single tap (Table 2).

1. Ensure that the CellPore™ Delivery Cartridge is properly placed into the Cartridge Holder and that the Safety Shield is correctly installed.
2. Run the sample by tapping Run [Run]. The Cartridge Holder will move vertically from its lowered resting position up to the Pressure Nozzle. The set pressure is applied to the sample for the pre-set duration. The pressure is then cut-off, and the Cartridge Holder lowers CellPore™ Delivery Cartridge back to its resting position for retrieval.
3. When completed, a badge with the run information appears below the sample (Figure 36).

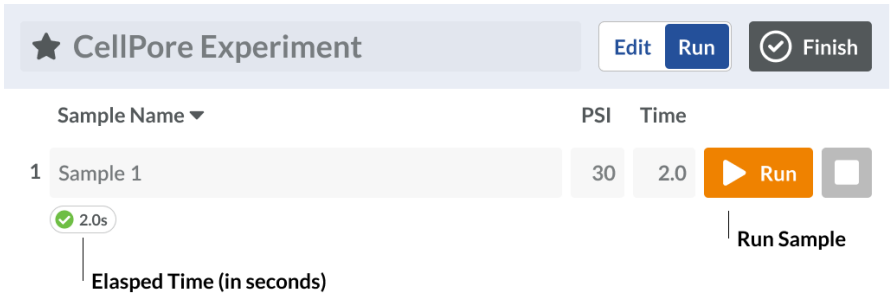


Figure 36. Automatic Mode Controls for Running a Sample

*Note: Once the sample has been processed, a **Re-run** option becomes available, indicated by [Re-Run]. This provides an ability for users to quickly run a duplicate reaction using a new CellPore™ Delivery Cartridge. Ensure the new CellPore™ Delivery Cartridge is properly placed in the Cartridge Holder before proceeding.*

Table 2. Summary of Run Operation in Automatic Mode

STEP	ACTION(S)	ICONS
Run the Sample	User taps [Run] to begin.	
Run in Progress	CellPore™ Transfection System automatically controls the CellPore™ Delivery Cartridge, pressure, and duration. CellPore™ Delivery Cartridge lowers to a resting position when complete; [Abort] icon is available in the unlikely event of a problem during the run.	
Re-Run (optional)	User may choose to run the same sample parameters in a new CellPore™ Delivery Cartridge (i.e. duplicate run). [Re-Run] functions like the [Run] icon.	

6.4.2 Manual Mode

Users may choose to run their samples manually in order to control the pressure duration. In this case, the following steps must be followed:

1. Ensure CellPore™ Delivery Cartridge is properly placed into the Cartridge Holder and that the Safety Shield is correctly installed.
2. Run the sample by tapping [Run]. The Cartridge Holder will move vertically from its lowered resting position to its raised position and pressing the Cartridge against the Pressure Nozzle. The set pressure is then continuously applied to the sample.
3. Once the entire sample has passed through the Cartridge, tap [Finish] to stop the flow or air and for the instrument to complete the run.

   NOTE: Smaller sample volumes may remain on the side of the collection tube rather than falling to the bottom. In either case, the sample run is considered to have completed successfully and the flow of air can be stopped.
4. The Cartridge Holder lowers the CellPore™ Delivery Cartridge back to its resting position for retrieval. For reference, a badge is displayed below the sample name, indicating the elapsed time (in seconds) the sample took to run (Figure 37 and Table 3).

Note: Once the sample has been processed, a Re-run option becomes available, indicated by [Re-Run]. This provides an ability for users to quickly run a duplicate reaction using a new CellPore™ Delivery Cartridge. Ensure the new CellPore™ Delivery Cartridge is properly placed in the Cartridge Holder before proceeding.

Figure 37. Manual Mode Controls for Running a Sample

Table 3. Summary of Typical Run Operation in Manual Mode

STEP	ACTION(S)	ICONS
Run the Sample	User taps ▶ [Run] to begin.	
Run in Progress	Instrument positions CellPore™ Delivery Cartridge and applies set pressure to the sample; ⏸ [Pause] or ✓ [Finish] icons become available once the flow of air begins.	
Finish the Run	User taps ✓ [Finish] once the sample has been processed	
Re-Run (optional)	User may choose to run the same sample parameters in a new CellPore™ Delivery Cartridge (i.e. duplicate run). ↻ [Re-Run] functions like the ▶ [Run] icon.	

Note: It is highly recommended to process the entire sample all at once for optimal performance. In very specific cases would samples require a temporary ⏸ [Pause], and ▶ [Resume] of the run. For complete instructions, refer to the applicable CellPore™ Transfection Kit PIS.

6.5 Collecting Processed Cells

1. Retrieve the processed CellPore™ Delivery Cartridge from the Cartridge Holder once it has returned to its lowered resting position.
2. If desired, place CellPore™ Delivery Cartridge in a microcentrifuge and spin for a few seconds to maximize sample collection.

   Note: CellPore™ Delivery Cartridge is designed for single-use and should be appropriately discarded after the run. Repeat use of CellPore™ Delivery Cartridges may impact subsequent performance and/or lead to sample clog or loss.

7.0 Logs and Run History

The History tab (Figure 38) on the Home Screen lists all the experiment sessions that have been performed in the current User Profile (section 5.2).

- The list is sorted in descending order by Run Date and cannot be re-sorted.
- The Pressure Status indicator displays whether all sample runs in the experiment were successful.
- Tap the Disclosure Control > [i.e. Collapsed History Item] to the left of each Experiment/Run name to view additional information about the samples run in that experiment (Figure 39).

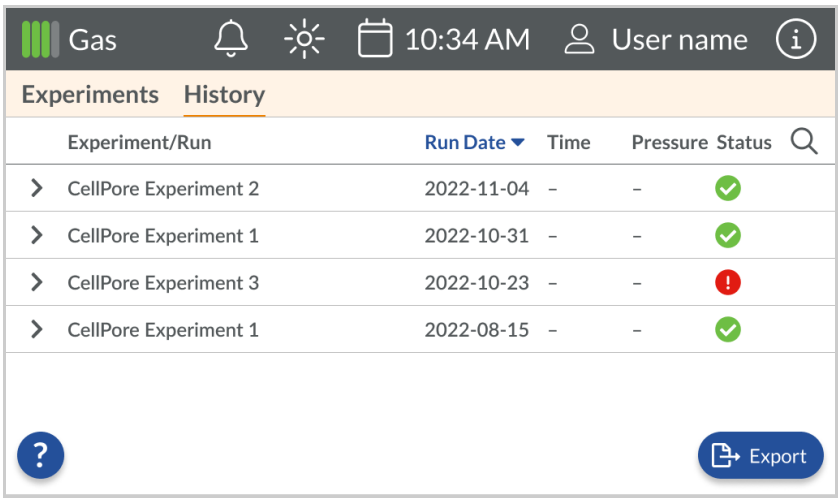


Figure 38. History Tab

The expanded experiment shows additional information about each sample run in that session (Figure 39):

- Sample name
- Run mode: [Automatic] or [Manual]
- Pressure in psi
- Run Status: [Completed Successfully] or [Completed with Error]

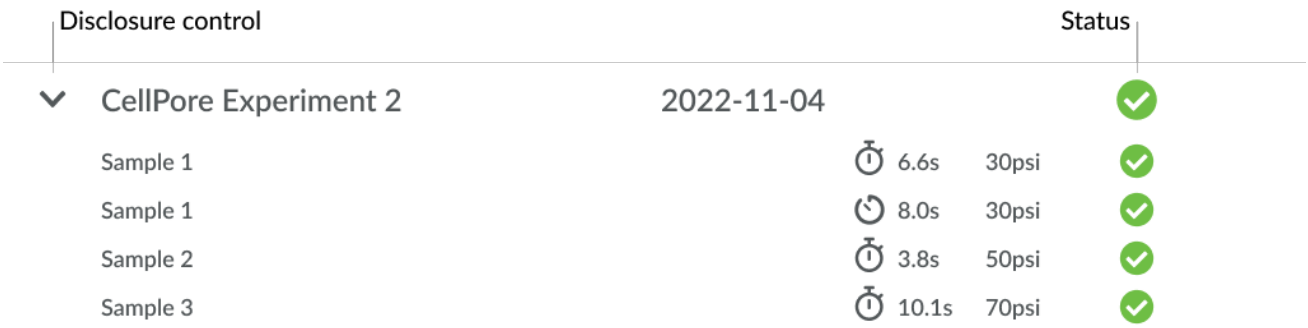


Figure 39. Expanded Experiment Menu

7.1 Searching Run History

Find records of past experiments within the current user account (Figure 40).

1. Tap [Find] at the top right of the History tab.
2. Select options to narrow the search. Day and experiment/sample name fields can be used simultaneously if desired.
    a. Select “All”, “Today”, or “Yesterday” to display history for experiments only from those time periods.
    b. Select “Specific Date” and then select the year, month, and day using the increment and decrement icons. The search results will contain experiment history from the specified day.
    c. Enter text in the “Experiment or sample name contains” field to display matching experiments in the history list.

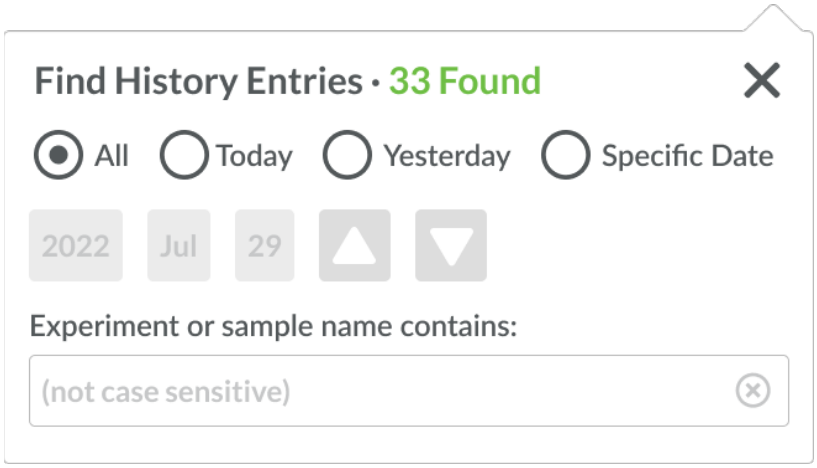


Figure 40. Searching Run History

7.2 Exporting Results

Experiment results can be exported in .csv format to a USB device (Figure 41).

1. Tap Export at the lower right.
2. Select the experiments to be exported.

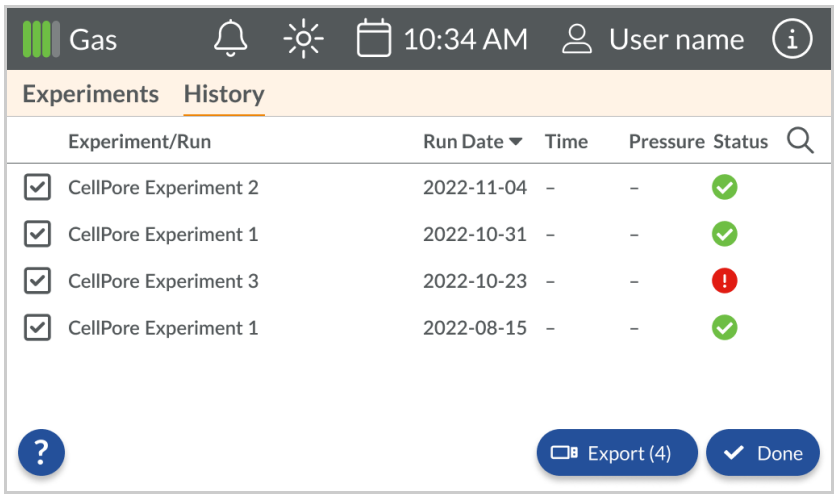


Figure 41. Exporting Results from the User History Menu

3. Tap Export. This icon shows the number of items to be exported in parentheses. A prompt will appear to insert a USB device if there is not one already inserted (Figure 42).
4. Tap Export in the dialog.

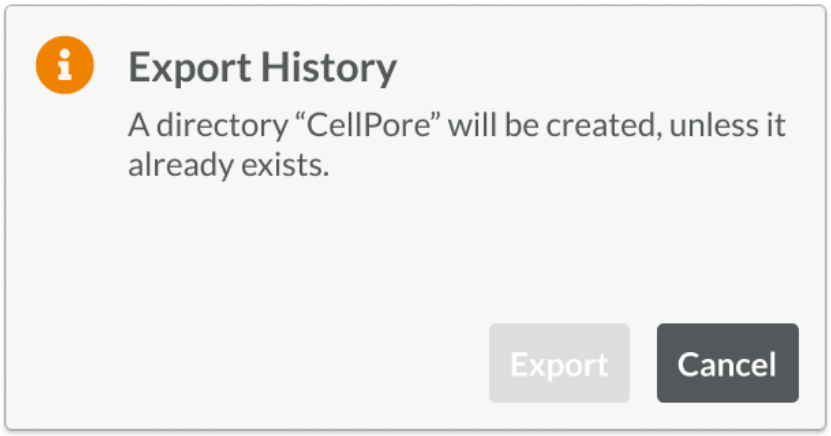


Figure 42. Dialog Box to Confirm Exporting Results to a USB Device.

8.0 Care and Maintenance

Since CellPore™ Transfection System uses disposable Cartridges and air pressure, no daily maintenance is required. However, the following routine maintenance and cleaning steps are recommended to ensure optimal performance, longevity, and reliability of your instrument.

8.1 Cleaning and Decontamination

Materials Required:

- Soft, clean towels
- 70% ethanol or 70% isopropanol
- Water
- Appropriate laboratory disinfectant solution (e.g. 1 in 10 dilution of bleach or sodium hypochlorite solution)
- Gloves, safety goggles, and any other required institute-specific personal protective equipment (PPE)

1. Ensure CellPore™ Transfection System is turned OFF and unplugged.
2. Discard any consumables (e.g. CellPore™ Delivery Cartridges) from the system.
3. Remove the Safety Shield and set aside.
4. Disinfect all surfaces (except the touchscreen monitor) by first wiping them down using towels sprayed with an appropriate laboratory disinfectant solution (Figure 43). Follow the instructions provided by the manufacturer of the disinfectant solution. Thoroughly clean the underside of the pressure nozzle to remove any residues.
5. Thoroughly wipe down the surfaces using towels sprayed with water to remove residual disinfectant that may cause corrosion.
6. Wipe down surfaces using towels sprayed with 70% ethanol or 70% isopropanol and let air dry.

Figure 43. Cleaning and Decontamination

7. To clean the touchscreen monitor, spray 70% ethanol or 70% isopropanol on a soft, clean towel and gently wipe down the screen (Figure 44).

   IMPORTANT: Do not allow excessive fluid to pool at the margins of the touchscreen. This can result in fluid seeping behind the touchscreen's external surface, which may damage the electrical components. DO NOT spray the disinfectant directly on the touch screen.

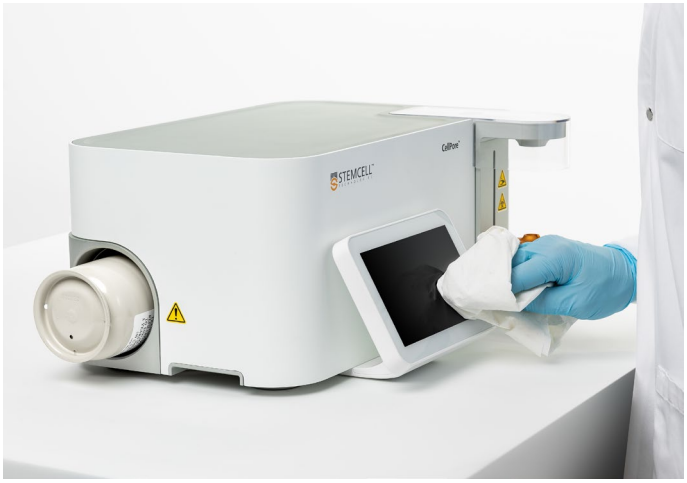


Figure 44. Cleaning the Touch Screen Monitor

8.2 Gas Cylinder Replacement

The approximate volume of compressed gas remaining in the cylinder is displayed graphically in the top left corner of the Control Bar (Figure 45).

Note: For continuous operation, it is recommended to keep a spare cylinder of compressed gas on hand. CellPore™ Transfection System will not run if the remaining gas pressure is too low and the icon displays the no pressure condition.

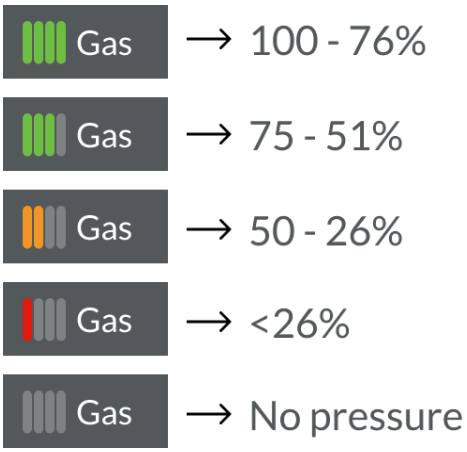


Figure 45. Gas Cylinder Level Indicator

Refer to www.stemcell.com/cellpore-gascylinders for ordering details of compatible compressed gas cylinders. To replace an empty cylinder, unscrew and remove the old cylinder from the instrument and replace with a new one as outlined in the above procedure (section 4.3). Dispose of the empty cylinder in accordance with your local regulations.

8.3 Replacing the Fuses

Fuses may need replacement if CellPore™ Transfection System does not power on after following the startup procedure (section 4.5). Two fuses are located on the back of the instrument next to the power supply outlet and the main power switch (Figure 7).

To replace the fuses:

1. Ensure that CellPore™ Transfection System is shut down (section 4.6) and that the main power switch located on the back of the instrument is in the OFF position.

   IMPORTANT: Unplug the instrument before opening the fuse box.

2. Examine the fuses and replace any faulty fuse with a FB 2 A 250 V~.
3. Reinsert the fuse box containing the new fuse(s) in its slot. Press gently until it snaps back into place.
4. Plug in CellPore™ Transfection System and follow the startup procedure (as outlined in section 4.5).

9.0 Specifications

Sample volume	20 - 200 µL
Dimensions	40.6 cm W x 31.7 cm D x 20.3 cm H 16" W x 12.5” D x 8” H
Weight	13 kg (29 lb) without gas cylinder 14 kg (31 lb) with gas cylinder
Power requirements	100 - 240 V~, 50 - 60 Hz, 1.6 A Fuses: 2 x F250 V, 2 A
Optimal operating conditions	15 - 30°C 20 - 85% relative humidity (non-condensing) Not specified for use inside an incubator or cold room Indoor use only
Storage and shipping conditions	-30°C to 50°C 10 - 90% relative humidity
Applied standards	*Product Safety* IEC 61010-1:2010, IEC 61010-1:2010/AMD1:2016 UL 61010-1:2012/R:2019-07 CSA C22.2 No. 61010-1:2012/A1:2018-11 CAN/CSA C22.2 No.61010-2-081:2019 UL 61010-2-081:2019 *Electromagnetic Compatibility* IEC 61326-1:2012 / EN 61326-1:2013 FCC Part 15 Subpart B ICES-003:2020 CISPR 11:2015/A2:2019 AS CISPR 11:2017
Meets all the provisions of the indicated European directives	2014/35/EU (Low Voltage Directive), 2014/30/EU (EMC Directive), and 2011/65/EU (RoHS Directive)

CellPore™ Transfection System is designed and manufactured so that it does not endanger the safety of operators when properly installed, maintained, and used in applications for which it was intended. CellPore™ Transfection System meets the requirements of European Directives 2014/35/EU and 2014/30/EU. CellPore™ Transfection System meets the requirements of CAN/CSA-C22.2 No. 61010-1-12 and UL standard No. 61010-1:2012 (safety requirements for electrical equipment for measurement, control, and laboratory use).

The CellPore™ Transfection System has the following symbol affixed to the rear:

This waste electrical and electronic equipment (WEEE) directive symbol denotes that CellPore™ Transfection System device should not be disposed of in municipal waste collection centers. CellPore™ Transfection System has been designed for easy dismantling and recycling. Contact STEMCELL Technologies regarding end-of-life care for CellPore™ Transfection System.

10.0 Troubleshooting

The following troubleshooting guidelines may be helpful if use of CellPore™ Transfection System does not provide expected results. If additional help is required, contact STEMCELL Technologies Technical Support.

10.1 Log Files

To assist with troubleshooting and diagnostics, a STEMCELL Technologies representative may ask to receive the system log files.

To access CellPore™ Transfection System log files:

1. Tap ⓘ [Information] in the upper right hand corner and enter the Information & Service tab (section 3.2.2).
2. Insert a USB device into the USB port of CellPore™ Transfection System located at the back near the power switch (Figure 7).
3. Select “Export Diagnostic Logs”.
4. Remove the USB device.

10.2 Power Issues

ISSUE	POTENTIAL CAUSE	SUGGESTED ACTION
Instrument does not start	No input power	Ensure the power cord is correctly connected into CellPore™ Transfection System and a functioning power outlet. If plugged into a BSC, ensure both the instrument power switch and the BSC outlet are in the ON position.
	Faulty fuse	Contact STEMCELL Technologies Technical Support for help with fuse replacement (section 8.3).
	Faulty power cable	Contact STEMCELL Technologies Technical Support. Test by temporarily attaching a PC computer tower cable in place of the usual cable.
	Faulty power supply	Contact STEMCELL Technologies Technical Support.

10.3 Hardware or Software Issues

ISSUE	POTENTIAL CAUSE	SUGGESTED ACTION
Operating system fails to start. System does not initialize to splash screen.	Operating system software corruption	Record any error messages displayed and contact STEMCELL Technologies Technical Support.
Screen turns on but does not initialize to splash screen. Small line of white text is on the top of the screen.	Rapid power cycling: CellPore™ Transfection System was power cycled off and on too quickly	Turn off CellPore™ Transfection System and wait at least 30 seconds before turning the power back on again.

ISSUE	POTENTIAL CAUSE	SUGGESTED ACTION
System initializes to the splash screen, but fails to finish loading onto experiment screen.	Cartridge Holder out of position	Power off CellPore™ Transfection System. Push the Cartridge Holder to the bottom. Wait 30 seconds. Power ON CellPore™ Transfection System.
Touchscreen is not responsive	Physical damage to screen or recalibration problem	Contact STEMCELL Technical Support.
Cartridge Holder is not responsive or stuck	Software or hardware connection problem	Follow instructions in section 10.5 to rescue your sample (if applicable). Restart the system. If issues persist, contact STEMCELL Technologies Technical Support.
“Safety Shield is Misaligned” error	Safety shield dislodged during operation	Ensure the Safety Shield is properly installed (section 4.2). The top of the Safety Shield should be flush with the rest of the instrument, and there should be no large gaps around the shield.
“Cartridge Leakage” error	Missing o-ring(s) on Cartridge Insert	Ensure an o-ring is present on the top surface of the Cartridge Insert lid. If missing, check inside the product bag. Install the o-ring into the groove of the cartridge lid before proceeding with the experiment. Additionally, an o-ring should also be present on the top surface of the Cartridge Insert where the lid closes to form a seal. If missing, check inside the product bag and install the o-ring into the groove of the Cartridge Insert.
	Improper placement of CellPore™ Delivery Cartridge in Cartridge Holder	Remove and reinstall CellPore™ Delivery Cartridge from the Cartridge Holder. Remove any obstructions and ensure that the CellPore™ Delivery Cartridge is properly placed within the Cartridge Holder.
	Improper seal at the nozzle interface	Thoroughly wipe the underside of the nozzle surface with 70% alcohol to remove any buildup of residue from routine use.
No or low air pressure	Empty gas cylinder	Gas cylinder pressure is too low for CellPore™ Transfection System to operate. Replace the gas cylinder.
	Improper installation of gas cylinder	Gas cylinder needs to be fully screwed into CellPore™ Transfection System. Remove gas cylinder and follow instructions in section 4.3. Replace empty gas cylinder.
	External cylinder option selected	Ensure the gas level indicator is displayed in the control bar. If the external cylinder option is displayed (i.e. arrow icon), tap on the arrow icon in the top left corner and select the “internal” option. Refer to section 3.2.1 for details.
	System leak	If all troubleshooting steps above have been followed, and new gas cylinder empties within a short period of time (within 5 days), contact STEMCELL Technologies Technical Support.

10.4 Experimental Issues

ISSUE	POTENTIAL CAUSE	SUGGESTED ACTION
After running, most of the sample remains inside the Cartridge Insert of CellPore™ Delivery Cartridge	Empty or low gas supply	Ensure gas cylinder level indicator shows enough air supply to operate CellPore™ Transfection System and that no system errors are present.
	Cartridge misplacement	Ensure the CellPore™ Delivery Cartridge is properly inserted into the Cartridge Holder. Hissing (air leak) may be heard for improperly placed cartridges (often accompanied by an error message).
	Improper pipetting of sample	When pipetting a sample into CellPore™ Delivery Cartridge, fully insert the pipet tip and dispense the sample at the bottom of the Cartridge Insert. Use standard pipette tips (e.g. 20, 100, or 200 µL) avoid generating excessive amounts of bubbles. Do NOT dispense samples on the side walls.
	Improper pressurization time	Sufficient pressurization time must be applied to ensure full sample volume processing into the Collection Tube (refer to section 6.4). Although most cell samples will be fully processed within a few seconds, samples of higher concentration under lower pressure conditions may require additional time. Re-run the sample by applying air pressure for a minimum of 10 seconds.
	Aggregated or clumpy cell sample	Ensure the cell sample is not aggregated and free of visible clumps. Gently pipette the sample up and down to produce a single-cell suspension. If large aggregates are present, consider passing the cells through a 40 or 70 µm cell strainer.
	Cell number is too high	Ensure the number of cells per reaction is within the recommended range specified in the applicable CellPore™ Transfection Kit PIS. Too many cells may result in clogging.
	Use of positive immunomagnetic cell isolation	It is recommended to use negative immunomagnetic cell isolation to prepare the cell samples. For positively-selected cells, it is recommended to use EasySep™ positive selection kits to ensure remaining particles do not clog the CellPore™ Delivery Cartridge. Use of micrometer sized particles are incompatible with the system.
Low cell survival	Cells kept at ambient temperature for too long	Transfer cells to the incubator when not in use, especially when working with larger sample sets. Prepare smaller experimental sets when working with cells at ambient temperature.
	Cells kept in CellPore™ Delivery Medium for extended periods of time	Cells kept for a several hours in CellPore™ Delivery Medium at ambient temperature may begin to show lower viability after manipulation via the CellPore™ Transfection System. Prepare smaller experimental sets and transfer cells into the incubator after transfection.
	Delivery pressure is not optimal	Use the recommended delivery pressure as specified in the PIS for the applicable CellPore™ Transfection Kit. Lowering the delivery pressure can increase cell viability, at the expense of delivery efficiency.
	Cell source is not optimal	Use primary cells from fresh (< 24 hours) leukapheresis samples isolated using recommended EasySep™ kits. Rest cryopreserved cells post-thaw in an appropriate cell culture medium.

ISSUE	POTENTIAL CAUSE	SUGGESTED ACTION
	Cell number is too low	Use cell number ranges as recommended in the applicable CellPore™ Transfection Kit PIS.
	Reaction volume is too low	Increasing the CellPore™ reaction volume can improve cell viability. Reaction volumes below 50 µL may result in lower cell viability.
	Cell handling procedure is too rough	Avoid excessive pipetting and over-centrifugation during isolation, sample preparation, and post-delivery collection. Pipette cells gently. Limit pipetting steps immediately after transfection, and incubate for 2 hours at 37°C and 5% CO_2.
	Reuse of CellPore™ Delivery Cartridges	Reusing CellPore™ Delivery Cartridges can cause clogging and carry-over of samples which will impact cell viability, delivery efficiency, and cell recovery.
Low delivery efficiency	Delivery pressure is not optimal	Use the delivery pressure as recommended in the applicable CellPore™ Transfection Kit PIS. If cell viability is high, increasing the delivery pressure can increase delivery efficiency at the expense of viability.
	Cargo amount is too low	Optimal cargo concentration should be determined via titration. A concentration of 100 µg/mL represents a good starting point.
	Cargo stock concentration is too low	Cargo addition should not exceed 10% (v/v) of the total reaction volume. Exceeding this value can negatively impact performance by altering the composition of the CellPore™ Delivery Medium.
	Cell number is too high	Use cell number ranges as recommended in the applicable CellPore™ Transfection Kit PIS.
	Reuse of CellPore™ Delivery Cartridges	Reuse of CellPore™ Delivery Cartridges can cause clogging and carry-over of samples that affect cell viability, delivery efficiency, and cell recovery.
Low cell recovery	Samples are not spun after processing	Spin the CellPore™ Delivery Cartridge for ~5 seconds in a mini centrifuge to increase sample recovery. Gently resuspend cells before transferring.
	Multiple pipetting steps	Limit the number of pipetting steps involved in the collection and/or processing of samples. Pre-rinsing pipettes in cell culture medium can limit cell sticking and help further improve recovery.
	Reuse of CellPore™ Delivery Cartridges	Reuse of CellPore™ Delivery Cartridge can cause clogging and carry-over of samples that affect cell viability, delivery efficiency, and cell recovery.

10.5 Rescue of Samples

10.5.1 Cartridge Holder Issue

In the unlikely event that the Cartridge Holder does not lower at the end of the run, and the CellPore™ Delivery Cartridge cannot be removed due to the position of the Cartridge Holder, the arm can be deactivated by shutting off power to the system:

1. Flip the switch at the back of the CellPore™ Transfection System to the OFF position. Wait 30 seconds
2. Firmly gasp the Cartridge Holder and lower it by applying a downward force.
3. Once lowered, retrieve CellPore™ Delivery Cartridge from the Cartridge Holder to collect the sample.

   Note: The Cartridge Holder position will be automatically calibrated and returned to the starting position when CellPore™ Transfection System is powered ON again. Therefore, the Cartridge Holder does not have to be returned to any particular position.
4. Once it if safe to do so, power ON CellPore™ Transfection System.

10.5.2 Power Outage

In the event of a power outage during a sample run, the following steps should be followed to rescue the sample and properly start up the CellPore™ Transfection System once power returns:

1. Flip the switch at the back of the CellPore™ Transfection System to the OFF position.
2. After 30 seconds, manually lower the Cartridge Holder by applying a downward force motion. Retrieve CellPore™ Delivery Cartridge.
3. Unscrew the gas cylinder by turning it in a counter-clockwise motion and set it aside.

   Note: This will prevent depleting the gas cylinder in the event the internal valve remained open due to the power outage.
4. Once power has returned, flip the switch at the back of the CellPore™ Transfection System to the ON position.

   IMPORTANT: Do not re-install the gas canister at this time. The system will self-correct internal components during this startup sequence.
5. Once the startup sequence in complete, shut off power to CellPore™ Transfection System.
6. Install the gas cylinder (as per section 4.3) by fully engaging the threads and screw in a clockwise motion.
7. Flip the switch at the back of the CellPore™ Transfection System to the ON position.

Once the startup sequence completes, the system is now ready to use.

10.6 Error Messages

ERROR MESSAGE	SOLUTION
Gas cylinder is low	The gas cylinder is almost empty. Ensure you have a replacement gas cylinder available. The system can still be used until the cylinder empties.
Regulator pressure issue	Contact STEMCELL Technologies Technical Support.
Pressure sensor mismatch	Possible leak or calibration problem. Contact STEMCELL Technologies Technical Support.
Possible pressure issue	Retry with a new CellPore™ Delivery Cartridge. If error persists, contact STEMCELL Technologies Technical Support.
Cartridge leakage	Check CellPore™ Delivery Cartridge and o-rings.
Cartridge is missing	The run could not be completed because the Cartridge is missing. Please insert a Cartridge and try again.
No input pressure	Ensure a gas cylinder is installed. If installed, replace the empty gas cylinder and try again.
External pressure is too high	Reduce the external source pressure.
Unexpected flow	Possible leak or calibration error. Contact STEMCELL Technologies Technical Support.
Flow is lower than expected	Possible leak or calibration problem. Contact STEMCELL Technologies Technical Support.
Unexpected pressure sensor reading	Contact STEMCELL Technologies Technical Support.
Unexpected pressure on pressure regulator sensor	Contact STEMCELL Technologies Technical Support.
Holder blocked	Remove any obstacles from the path of the Cartridge Holder.
Holder could not reach home position	Remove any obstacles from the path of the Cartridge Holder. Obstruction is likely below the Cartridge Holder.
Safety Shield is misaligned	Reposition the Safety Shield according to section 4.2 in order to run samples.
Flow sensor offline	Restart CellPore™ Transfection System. If the problem persists, contact STEMCELL Technologies Technical Support.
Motor controller in error state	Restart CellPore™ Transfection System. If the problem persists, contact STEMCELL Technologies Technical Support.
Motor controller disconnected	Restart CellPore™ Transfection System. If the problem persists, contact STEMCELL Technologies Technical Support.
Holder could not leave home position	Remove any obstacles and restart CellPore™ Transfection System. If the problem persists, contact STEMCELL Technologies Technical Support.
Internal error	Restart CellPore™ Transfection System. If the problem persists, contact STEMCELL Technologies Technical Support.
Configuration error	Contact STEMCELL Technologies Technical Support.

11.0 Software Products

The instrument can be updated by the user via a USB device when a new software package is released by STEMCELL Technologies. Though most common USB devices should work, an empty FAT32 formatted drive should ideally be used for optimal compatibility.

Warning: Do not change the file name of the downloaded update package because the instrument expects the file name in a specific format.

First, verify that the software update package contains a newer version than software currently installed on the instrument. To find currently installed software version, refer to section 3.2.2. Review the version number and compare it with the update package number. If the update package contains a higher version, proceed with the following instructions to install the new software:

1. Download the update package for CellPore™ Transfection System.
2. Save the file to an empty USB device. Do not place the file into a directory, but leave it in the main folder of the USB drive. It should be the only file on the USB drive.
3. Ensure that the instrument is powered ON and fully initialized to the Experiment screen.
4. Plug the drive to the USB port located at the back of the instrument above the power switch.
5. Wait several seconds for validation of the update package. A notification will appear in the Control Bar once the update is ready to install.
6. Tap  [Notifications] and tap “Install”.
7. Follow the on-screen instructions to proceed.

Alternatively, if the update notification does not appear or is dismissed, the software update can be initiated by going to the  [Information] screen under the Service tab, and then tapping “Software Update”.

After a successful installation, CellPore™ Transfection System will be automatically restarted with the updated software.

USER REFERENCE MANUAL

CellPore™ Transfection System

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