

## Little Dipper<sup>®</sup> Processor USER MANUAL

CAT. #1080-XX-1 (115V); 1080-XX-2 (230V)

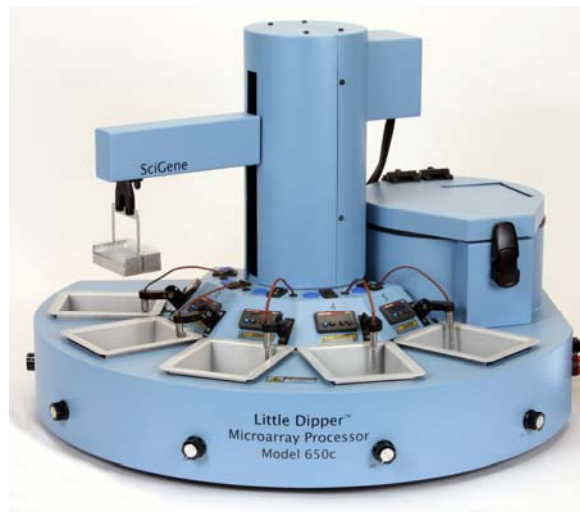
For FISH  
Cat. # 1080-70-1/2 (115V/230V)

For Illumina<sup>®</sup> BeadChip<sup>®</sup> Processing  
Cat. #1080-30-1/2 (115V/230V)

For Agilent Arrays  
Cat. #1080-40-1/2 (115V/230V)

For Roche NimbleGen Arrays  
Cat. #1080-80-1/2 (115V/230V)

For Self Spotted Arrays  
Cat. #1080-50-1/2 (115V/230V)



**FOR RESEARCH USE ONLY**  
**Not for Use in Diagnostic Procedures**

Manufactured by:

SciGene, Inc. (a subsidiary of) 1080-XX-1 (115V); 1080-XX-2 (230V)  
1080-70-1/2 (115V/230V) 1080-30-1/2 (115V/230V) 1080-40-1/2 (115V/230V) 1080-80-1/2 (115V/230V)  
1080-50-1/2 (115V/230V)

## Serial Number

The following serial number identifies the specific instrument you have purchased and must be referenced when requesting service. A copy is affixed to the instrument.

Technical Service: (408) 733-7337, techserv@scigene.com

## Warranty

SciGene warrants that the Little Dipper® Processor described in this manual shall be free of defects in materials and workmanship for a period of 12 months from date of delivery. This warranty does not cover removable parts or accessories, including removable baths. In the event of a defect during the warranty period, SciGene's limit of liability will be to provide repair service at its factory at no charge or, at its sole discretion, replace the product. All original packaging should be retained by the customer in the event that the instrument is returned to the factory for service or repair. The foregoing warranty is void in the event the unit was abused or modified or used in a manner inconsistent with its intended purpose. SciGene makes no other warranty, expressed or implied including warranties of merchantability and fitness for a particular purpose. In no event shall SciGene be liable for any direct, indirect, special, incidental or consequential damages or for any damages resulting from loss arising out of or in connection with the sale, use or performance of the product.

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## Intended Use

The intended use of this instrument is for washing and drying of microarrays and fluorescent in situ hybridization (FISH) slides.

This instrument should only be used according to instructions provided in this User Manual and other SciGene technical documents. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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**I. SAFETY NOTICES**

**A. Instrument Safety**

Before operating the instrument, read the information in this section concerning hazards and potential hazards. Ensure that everyone involved with the instrument’s operation is instructed in both general safety practices for laboratories and specific safety practices for the instrument.

**B. Conventions and Labels**

The following is a glossary of the safety conventions and symbols that are used on the Little Dipper® Processor. Whenever such symbols appear on instruments, please observe appropriate safety measures.

**1. Warnings**

Failure to comply with the following warnings that are affixed to the product can lead to possible personal injury or death.

	<p><b>⚠ WARNING</b></p> <p>For the continued protection against risk of fire, replace only with fuse of the specified type and current ratings.</p>		<p><b>⚠ WARNING</b></p> <p><b>HAZARDOUS VOLTAGE.</b> Disconnect power before servicing.</p>
	<p><b>⚠ WARNING</b></p> <p>Do not use in vicinity of flammable or combustible materials. Fire or explosion may result.</p>		<p><b>⚠ WARNING</b></p> <p><b>Avoid spills on cabinet.</b></p>



*This symbol indicates the potential for a Pinch Point. Do not place fingers in the slot in the Z-axis tower.*



*This symbol indicates the potential presence of a Hot Surface. Turn off the temperature controller and leave sufficient time for cooling or use heat protection prior to handling a bath.*



*Biological hazards can be associated with the materials used on this instrument. Potentially infectious waste and other hazardous waste must be treated in accordance with good laboratory practice guidelines.*

## 2. Cautions

Failure to comply with the following cautionary statement affixed to the product may lead to possible personal injury.



***Do not touch the bottom metal surface of the bath during operation. Insert the bath liner and fill with buffer before turning on power to each bath.***



***The Little Dipper System weighs approximately 59 lbs (26.5 kg). Use caution when lifting the unit to avoid personal injury.***



***Do not under any circumstances lift the unit by the cylindrical tower or its extended gripper arm!! This will damage the instrument!***



***Do not under any circumstances run a protocol while a bath cover is in place.***



***To achieve temperatures above 70 °C, a bath cover must be used to obtain and maintain temperatures. When the robot is in use, baths running at high temperatures may need to be topped off due to evaporation.***

## C. Spills and Reagent Disposal



***Observe all national, regional, and local regulations for waste disposal and management.***



***Biological and other hazards can be associated with the materials used on this instrument. Potentially infectious and other hazardous waste materials must be treated in accordance with good laboratory practices.***



***This symbol indicates the potential presence of a Hot Surface. Use care when cleaning a spill in this area to avoid being burned.***

## 1. Cleaning Spills

- a. Turn off the instrument.
- b. Wipe the spill using an absorbent material. Always pull the liquid to the front of the instrument, away from the control panel and around the bath positions.
- c. Clean the deck with a cloth or paper towel and an appropriate disinfectant solution (e.g. 70% ethanol) for the type of spill present.
- d. Wipe the deck dry.
- e. Dispose of the material in a manner that is in accordance with good laboratory practices.

## 2. Disposing of Reagents

Some chemicals used on this instrument can be hazardous. Please adhere to good laboratory practices when disposing of hazardous chemicals.

## II. SITE PREPARATION

The Little Dipper Processor requires a level surface area of at least 30x22 inches (76x56cm) with a vertical clearance of 30 inches (76 cm) (Fig. II-1). Locate the unit within 3 feet (1 meter) of a single power outlet that delivers at least 1700 Watts/20 Amps of constant power.

Clear the benchtop for the instrument before unpacking any cartons. Allow unimpeded access to the Emergency Off button and main power switch on the right side of the instrument.

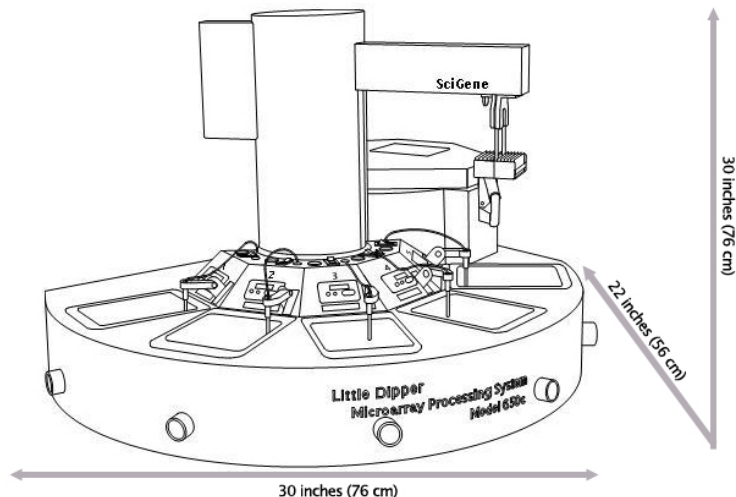


Fig. II-1. Allow proper clearance for the instrument.

### III. UNPACKING AND SETUP

#### A. Unpacking and Verifying Items

The Little Dipper Processor is usually shipped in two cartons — a large carton for the instrument and small carton for accessories. The instrument weighs approximately 59 lbs (26.5 kg). Never attempt to lift or move the instrument alone. Use caution when lifting the unit to protect yourself and others from personal injury.



***Do not lift the unit by the robot arm. Always grip the instrument from underneath the base when lifting!!***

1. Open the large carton and remove the interior box and foam.
2. With the aid of another person, carefully lift the instrument by its base only, and place it directly on the benchtop (Fig. III-A-1). Ensure clearance around the instrument making sure not to block the cooling fan in the back.
3. Use scissors to cut the white tie wrap that prevents the gripper arm from rotating during shipping (Fig. III-A-2).
4. Unpack the interior box that contains the touchscreen, power cord and user documentation.
5. Open the smaller carton and remove the accessories and additional components. Items correspond to the specific configuration (catalog number) of the instrument.
6. Verify all packing list items are received in good condition.



Fig. III-A-1. Lift by the base.



Fig. III-A-2. Cut tie wrap.

Table 1. Items Provided in Shipment

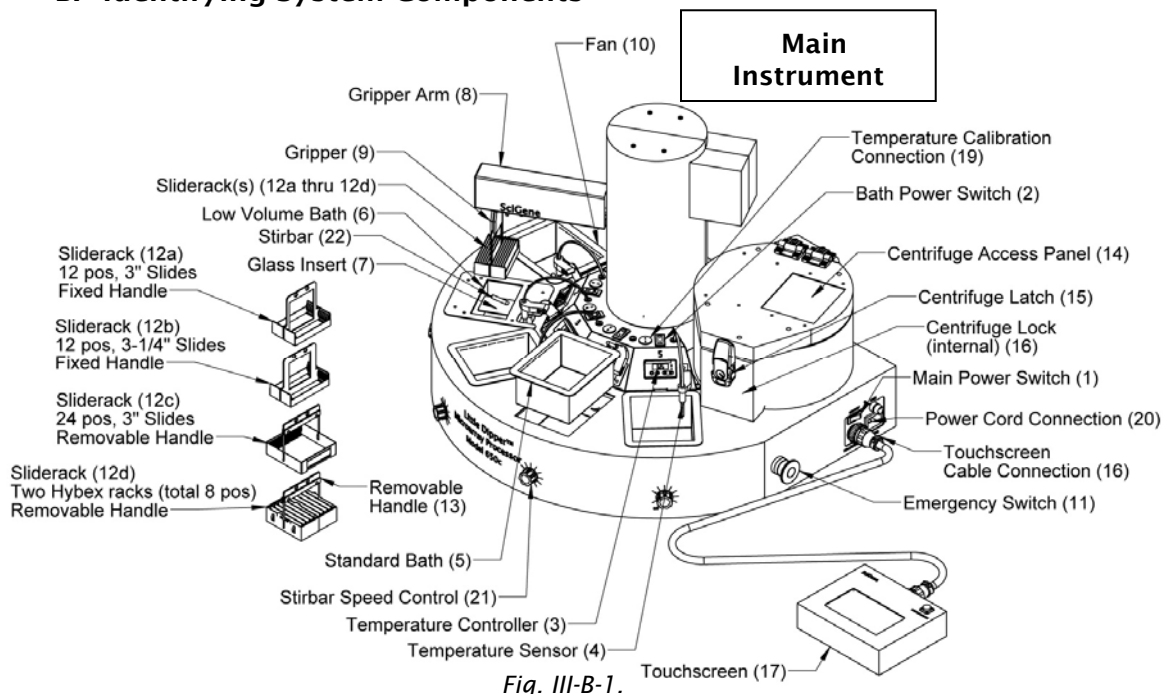
INSTRUMENT Carton	ACCESSORIES Carton
Little Dipper Processor	* Baths, Glass Inserts, Slide Racks
User Manual	* Bath Covers
Power cord	* Digital Thermometer
Touch screen with cable	* Centrifuge Buckets, Pads and Spacers

*\*Varies by configuration.*

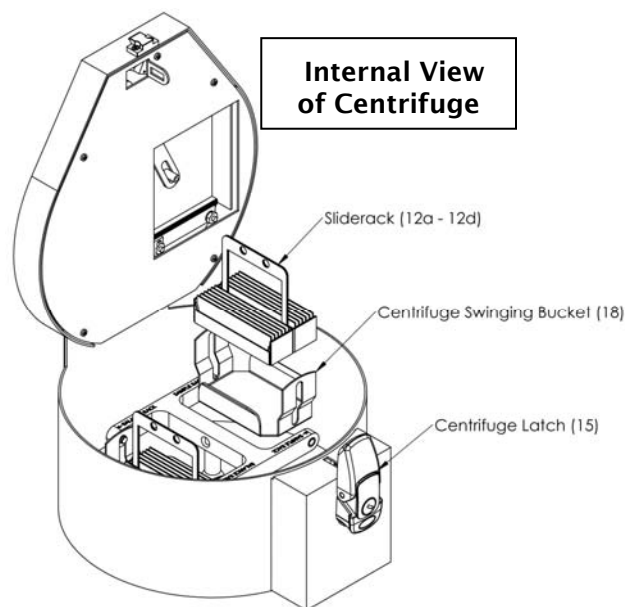
Contact SciGene Customer Service [custserv@scigene.com] or your local distributor regarding any discrepancy.



**B. Identifying System Components**



1. **Main Power Switch** – Turns on power to the unit
2. **Bath Power Switch** – Turns on power to each bath, for heating liquid
3. **Temperature Controller** – Used to set and observe bath temperature
4. **Temperature Sensor** – Transmits bath temperature to controller.
5. **Standard Bath** – Removable insert, compatible with most liquids/solvents
6. **Low Volume Bath** – Removable stainless steel insert
7. **Glass insert** – Protects stainless steel from stir bar abrasion
8. **Gripper Arm** – Rotates and moves slide racks up and down in baths
9. **Gripper** – Opens, closes and secures the slide rack assembly
10. **Fan** – Draws air through the instrument cabinet for cooling
11. **Emergency Switch (EMO)** – Cuts power to the instrument
12. **Slide Rack(s)** – Holds slides during processing.
13. **Slide Rack Handle** – Attaches to Hybex and 24-position slide racks.
14. **Centrifuge Access Panel** – Automatically opens for the gripper arm to insert a slide rack
15. **Centrifuge Latch** – Keeps lid closed
16. **Touch screen Cable Connection** – Receptacle for attaching control cable
17. **Touchscreen** – Used to create, store and run protocols and for calibration
18. **Centrifuge Swinging Buckets** – Red (balance) and green (sample) buckets are removable. Sample bucket receives slide rack from gripper.
19. **Temperature Calibration Connection** – Receptacle for cable to thermometer
20. **Power Cord Connection** – Receptacle for power cord
21. **Stirbar Speed Control** – Rotating switch to adjust stirbar speed
22. **Stirbar** – Spinning bar that creates a



gentle vortex in the bath

### C. Computer and Power Connections

1. Connect the braided cable to the touchscreen and to the receptacle labeled “TOUCHSCREEN” on the right side of the instrument, using the circular connectors (Fig. III-C-1).
2. Connect the power cord to the receptacle labeled “POWER” on the right side of the instrument (Fig. III-C-2) and to a power source that delivers 15 Amps or more for 115V units or 8 Amps or more for 230V units. Avoid connecting to a circuit with a centrifuge, freezer or other equipment that draws significant power.
3. Turn on the main power switch on the right side of the instrument. The touchscreen should illuminate and the motors should activate (Fig. III-C-3).
4. Briefly turn on power to each of the five baths using the power switch located above each bath position (Fig. III-C-4). Verify that each temperature controller illuminates and then turn off power to each bath position.



***Baths should not be powered on for more than a few seconds without buffer in the bath inserts. Do not heat dry baths.***



Fig. III-C-1. Connect touchscreen.

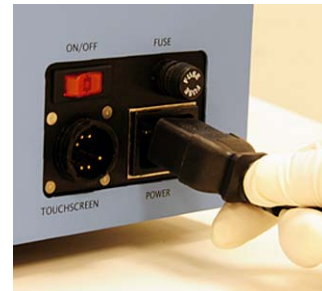


Fig. III-C-2. Connect power cord.



Fig. III-C-3. Turn on main power.

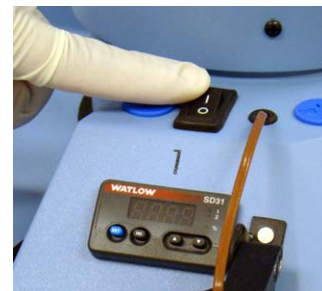


Fig. III-C-4. Briefly turn on baths.

## IV. SYSTEM OPERATION

### A. Installing Baths and Centrifuge Buckets

1. Clean bath inserts, racks and stir bars by rinsing in running tap water, followed by 100 ml of DI water and then 100 ml of ethanol. Dry with a lint-free towel (Fig. IV-A-1).
2. Clean sensors with DI water and a lint-free towel (Fig. IV-A-2).
3. According to the instrument configuration, install standard or heatable low volume baths by first rotating temperature sensors up, placing baths and then lowering sensors. For low volume baths without temperature control, leave sensors down while placing baths (Fig. IV-A-3).
4. Place glass inserts in all low volume baths (Fig. IV-A-4).
5. Place a stir bar in all baths. Note that low volume baths use low profile stir bars (SciGene cat. #1080-11-1) (Fig. IV-A-5).



Fig. IV-A-1. Clean baths and racks.



Fig. IV-A-2. Clean sensors.

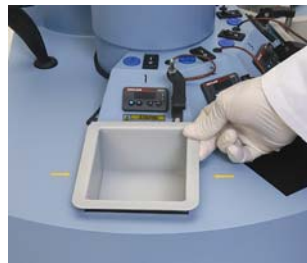


Fig. IV-A-3. Add removable baths.



Fig. IV-A-4. Add glass inserts.

6. Unlock and open the centrifuge.
7. Insert a red bucket by hanging it on the round tabs on the rotator arms marked "BALANCE RACK". Repeat using a green bucket on the rotator arms marked "SAMPLE RACK" (Fig. IV-A-6).
8. Place an absorbent pad in the bottom of each bucket and put a black frame spacer on top (Fig. IV-A-7).
9. Balance the centrifuge by inserting a rack with the same number of slides as the sample rack into the red bucket (Fig. IV-A-8).
10. Close and lock the centrifuge (Fig. IV-A-9).

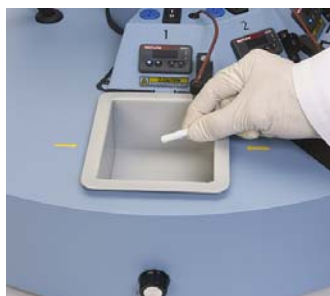


Fig. IV-A-5. Add stir bars.

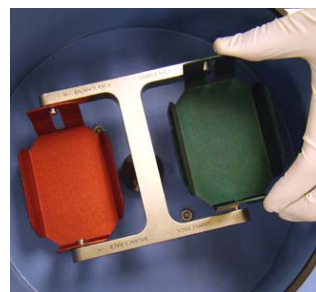


Fig. IV-A-6. Insert buckets.

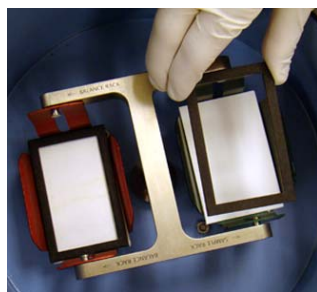


Fig. IV-A-7. Insert pads and spacers.



Fig. IV-A-8. Load balance rack.

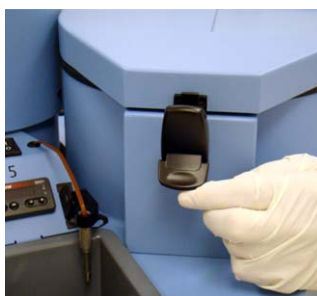


Fig. IV-A-9. Lock centrifuge.

## B. Using the Touch Screen

Use the handheld touchscreen to navigate between screens, select and run protocols, create new protocols and control instrument movement (Fig. IV-B-1). If the touchscreen fails to respond, it may require calibration. See Section VI C. for details.



Fig. IV-B-1. Use touchscreen controls.



Fig. IV-C-1. Pause protocols as needed.

### C. Using the Pause Button

The action of the instrument can be immediately stopped and restarted using the illuminated red “PAUSE/RESUME” button at top right on the touchscreen. When pressed, the instrument will stop and the button light will flash. To resume the protocol, press the button again (Fig. IV-C-1).

### D. Using the Emergency Stop

To immediately stop movement of the gripper arm and stir bars, press the red Emergency Stop (EMO) button on the right side of the instrument (Fig. IV-D-2). Bath heaters will continue to receive power. To restore power to the gripper arm and stir bars, release the EMO button by rotating it a quarter turn clockwise (Fig. IV-D-2). To move the arm, press **Control Panel** on the Home Page and use the up | down | left | right buttons. To remove the slide rack, hold the rack and press the **Open Gripper** button on the Control Panel screen. The protocol will not resume upon releasing the EMO switch and must be restarted from the beginning.



*If the touch screen does not illuminate when the unit is turned on, rotate the red EMO button on the side of the instrument to release the emergency stop.*



Fig. IV-D-1. Press EMO to stop.



Fig. IV-D-2. Rotate to restore power.

### E. Running a Test Protocol / Practicing Rack Loading

This test verifies the mechanical operation of the instrument and provides the operator an opportunity to practice loading the slide rack onto the gripper. An empty slide rack is automatically moved from bath to bath with agitation, followed by a brief centrifugation. No liquid is required for this test and temperature controllers should remain OFF.

1. Ensure that baths and buckets are properly installed (see section **IV. A. Installing Baths and Centrifuge Buckets**) and correspond to the size of the slide racks to be used. Verify that the all temperature sensors are rotated down.
2. Turn on main power located on the right side of the instrument.
3. Using the touchscreen, press **Run Protocol** from the home screen then select the **Quik-tst** protocol (Fig. IV-E-1).

4. Hold an empty slide rack centered in Bath #1, aligned with the black lines on the instrument and slightly below the bath fill line.
5. Start the protocol by pressing **Start Now** in the lower right corner of the touchscreen. The gripper arm will lower into Bath #1 with the gripper open. Align the holes in the handle with the two bumps in the gripper paddle as the gripper closes (Fig. IV-E-2).

If the gripper closes and the rack is not held securely, press the red EMO switch immediately (Fig. IV-D-1). Release the rack, if needed, by pressing **Open Gripper** from the **Control Panel** screen, then select and start the protocol again.



**Immediately press the EMO switch to stop the instrument, if the slide rack fails to mount on the gripper properly or touches the sides of the bath.**

6. The instrument will now agitate the rack in each bath.
7. Observe the placement of the slide rack in the baths. The rack will automatically move from the last bath into the centrifuge and spin for a minute.

If the rack touches the sides of the baths, consult section **VII. B. Slide Rack Position Calibration**.

8. When the protocol is complete, unlock and open the centrifuge lid to remove the rack from the sample bucket.



Fig. IV-E-1. Quik-tst protocol.



Fig. IV-E-2. Load slide rack.

## F. Running a Pre-Installed Protocol



*Do not under any circumstances run a protocol while a bath cover is in place.*



*To achieve and maintain temperatures above 70 °C, a bath cover must be used, while the machine is **NOT** in motion. Baths at high temperatures may need buffer(s) added to offset evaporation.*

The instrument comes configured with validated protocols installed. Refer to the Little Dipper Processor Method corresponding to the microarray or FISH protocol to be performed for details on how to set up the instrument. Method sheets can be found online [[www.scigene.com/support/protocols](http://www.scigene.com/support/protocols)] or can be requested from SciGene Customer Service [[custserv@scigene.com](mailto:custserv@scigene.com)] or your local distributor.

The following are general guidelines on how to set up and run a pre-installed protocol.

1. Ensure baths, racks and stir bars are free of buffer residue and dust. See section VI. A. **Cleaning Before Every Use.**
2. Insert baths, glass inserts (for low volume baths) and stir bars as specified for the protocol (Fig. IV-F-1).
3. Rotate all temperature sensors down (Fig. IV-F-2).

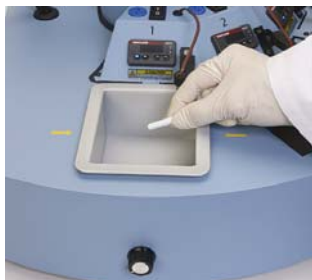


Fig. IV-F-1. Place baths and stir bars.



Fig. IV-F-2. Rotate sensors down.



Fig. IV-F-3. Turn on main power.



Fig. IV-F-4. Set temperature(s).

4. Add recommended buffer(s) to the fill line.
5. Turn on main power to the instrument (Fig. IV-F-3).

6. Turn on power to bath(s) to be heated and set temperature(s) (Fig. IV-F-4). Cover any baths set above 70°C. Allow time for baths to reach set temperature(s).
7. Place a balance rack into the centrifuge with same number of slides as the sample rack (Fig. IV-F-5).
8. Add microarray or FISH slides to sample rack. To insert microarray slides, submerge the sample rack in a glass dish filled with the same buffer to be used in Bath #1. Remove slides from the hybridization cassette and insert into the submerged rack (Fig. IV-F-6).
9. Remove any bath covers.
10. Move the sample rack to Bath #1.
11. On the touchscreen home page, press **Run Protocol**, then select the desired protocol and press **Start Now** (Fig. IV-F-7).
12. Carefully lift the sample rack and load onto gripper (Fig. IV-F-8). The instrument will perform the steps as programmed.
13. At completion (depending on the protocol), remove the rack from the centrifuge (Fig. IV-F-9) or from above the last bath (Fig. IV-F-10), if running a protocol without centrifugation, by pushing the thumbpad to open the gripper paddle.
14. Clean the instrument per section VI. B. **Cleaning After Every Use.**



Fig. IV-F-5. Insert balance rack.

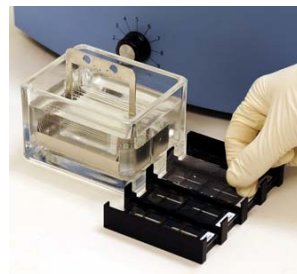


Fig. IV-F-6. Add slides to sample rack.

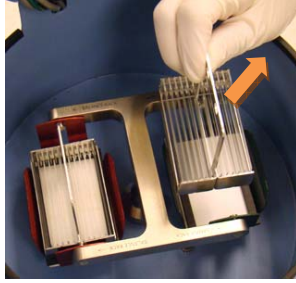


Fig. IV-F-7. Press Start Now.

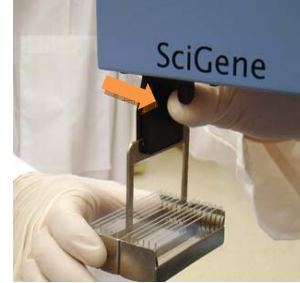


Fig. IV-F-8. Load sample rack.





*Fig. IV-F-9. Remove rack (option 1).*



*Fig. IV-F-10. Remove rack (option 2).*

## G. Using the Temperature Controllers

Temperature controllers are used to regulate heating of the five bath positions. Each controller is calibrated at the factory to provide an accurate bath temperature when operated between 35 to 90°C. The following instructions are general guidelines for setting temperature(s).

1. Select a bath position (according to your protocol) and turn ON the switch above the bath to provide power to the temperature controller. The controller will display current temperature.
2. Press and hold the SET button to view the previous set temperature.



***Baths should not be powered on for more than a few seconds without buffer in the bath inserts. Do not heat dry baths.***



***Do not touch the bottom metal surface of the bath during operation. Insert the bath liner and fill with buffer before turning on power to each bath.***



***This symbol indicates the potential presence of a Hot Surface. Turn off the temperature controller and leave sufficient time for cooling or use heat protection prior to handling a bath.***

3. To change the set temperature, press and hold the SET button, then press the up or down arrow buttons until the desired temperature is shown. Release the SET button. Allow time for the bath to reach the set temperature and stabilize.

Refer to section VII. A. **Temperature Controller Calibration** for information on calibrating the controllers.

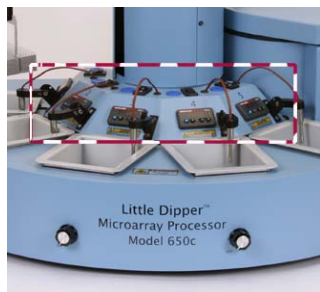


Fig. IV-G-1. Temperature controllers.



Fig. IV-G-2. Set temperature.

## V. CUSTOM PROTOCOLS

### A. Adding a Protocol

Custom protocols can be created using the touchscreen. The touchscreen can store up to 14 protocols with 1 to 9 steps each.

1. From the touchscreen Home page, press New/Edit Protocol. On the **Create/Edit Protocol** screen (Fig. V-A-1)., use the up/down buttons to move the cursor “»” to “NEW”. Press Select to go to the **Name Protocol** screen (Fig. V-A-2).
2. Within the **Name Protocol** screen, use the shift key to move the “^” (up arrow) within the numeric 10 key pad until the desired letter is indicated. Press to select the indicated letter displayed above the key pad. Continue for up to eight characters.
3. When finished, press Enter to go to the **Step Input** screen (Fig. V-A-3) and then press Step 1.
4. When the **Parameters** screen displays, press the Bath # button, enter “1”, and then press Enter.



Fig. V-A-1. Create/Edit Protocol screen.



Fig. V-A-2. Name Protocol screen.



Fig. V-A-3. Step Input screen.



Fig. V-A-4. Step 2 Parameters screen.

5. Select the remaining parameters for Step 1 of the protocol and then enter the desired values within the ranges indicated.



**All protocols start from Bath #1.**

Table 2. Parameter Settings for Custom Protocols

Parameter	Range
Agitation Rate	0-600
Agitation Time	0-32,000 seconds
Stroke Length	Standard or Long
Pause Time <sup>1</sup>	0-32,000 seconds

1 Time the instrument pauses at the end of the step with rack remaining submerged.  
 2 After agitation, time that the rack is suspended above bath, before moving

6. To add a Pause within the protocol, do one of the following:
  - Enter time for rack to remain submerged at end of step
  - Enter 9999 for User Control. Rack will stay submerged until the operator presses the touchscreen to resume the protocol. This is beneficial for protocols that require more than 5 baths.
7. When all values for Step 1 are entered, press Save and Exit to return to the Step Input screen.
8. Continue to enter values for additional steps (max. 9) (Fig. V-A-4). Remember to program “C” for the centrifuge, if ending in a drying step.
9. When finished creating the protocol, press Save & Exit to return to the Select Protocol screen. Up to 3 steps are displayed at one time on the touch screen. Each screen of the protocol must be saved separately before saving the entire protocol.

**B. Deleting a Protocol**

1. To delete a protocol, press **Control Panel** from the home screen then **Advanced Settings**.
2. Press the **Delete Protocol** button to open the screen.
3. Choose a protocol to delete using the up and down arrows and then press Select. A confirmation screen appears saying “Delete Protocol?” Choose YES to confirm.
4. Press the BACK button on each of the previous screens to return to the home screen.



Fig. V-B-1. Advanced Settings screen.



Fig. V-B-2. Delete Protocol button.



Fig. V-B-3. Delete Protocol screen.



Fig. V-B-4. Delete Protocol confirmation.



## VI. PERIODIC MAINTENANCE

The following instructions for periodic cleaning and maintenance can be found online at [www.scigene.com/support/LD\\_Periodic\\_Maintenance.pdf](http://www.scigene.com/support/LD_Periodic_Maintenance.pdf)

### A. Cleaning Before Every Use

Baths, racks and stir bars must be free of buffer residue and dust before processing slides. If they were not cleaned and stored properly after the last use, wash and dry them as follows:

1. Fill baths containing the rack(s) and stir bars with tap water.
2. Wipe racks, stir bars and baths with a lint-free towel.
3. Rinse in running tap water.
4. Rinse with approximately 100-200 ml of DI water.
5. Rinse with 100 ml of ethanol and dry with a lint-free towel.
6. Clean temperature sensors with DI water and a lint-free towel (Fig. VI-A-1).

### B. Cleaning After Every Use

1. Wash baths, stir bars and racks with running tap water then rinse in DI water and ethanol and dry with a lint-free towel. Store in clean plastic bags to protect from dust (Fig. VI-B-2).
2. Clean temperature sensors with DI water and lint-free towel.
3. Wipe exterior of instrument cabinet with a damp paper towel.



Fig. VI-A-1. Clean temperature sensors.



Fig. VI-B-2. Place clean baths in bags.

### C. Monthly Cleaning and Calibration

1. Calibrate bath temperatures using a NIST-certified thermometer. See section **VI. A. Temperature Controller Calibration** or SciGene's document "*Bath Temperature Validation Methods for CLIA-Regulated Laboratories*".
2. Remove and wash the centrifuge buckets and spacers using warm water and lint-free towels.
3. Replace the absorbent pad in each centrifuge bucket.
4. Clean all exterior surfaces of the cabinet, gripper paddles and gripper arm housing with damp, lint-free towels.
5. Remove the centrifuge buckets. Clean the inside surfaces of the centrifuge and rotor with damp, lint-free towels.

6. Inspect the centrifuge buckets for signs of wear or deformation where they hang from the rotor. Replace if worn or bent.

## VII. SYSTEM CALIBRATION

The instrument is calibrated and tested at the factory and should not require adjustment under most circumstances.

### A. Temperature Controller Calibration

The temperature controllers are calibrated at the factory to provide accurate bath temperatures from ambient +5 to 90°C. Re-calibration is recommended only if the display varies by more than one degree (1°C) to the temperature shown on an externally connected NIST certified digital thermometer (Cat. #1051-52-0). The following procedure can be found online: [[www.scigene.com/support/LD-Method\\_Temp.Calibration.pdf](http://www.scigene.com/support/LD-Method_Temp.Calibration.pdf)].

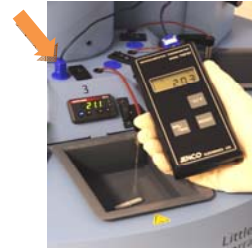
1. Add water to bath fill line and ensure temperature sensor is down in contact with liquid in the bath (Fig. VII-A-1).
2. Set the temperature on the controller to 65°C and allow 20 minutes to stabilize (Fig. VII-A-2).
3. Using the cable provided with the digital thermometer, plug one end into the blue receptacle above the bath and the other into the thermometer (Fig. VII-A-3).
4. Turn ON the thermometer. The bath temperature will be displayed.
5. On the temperature controller, press the Infinity Key ( $\infty$ ) for three seconds until "OPEN" appears.
6. Press the Down Arrow ( $\downarrow$ ) four times until "Cal" appears.
7. Press and hold the SET key. The existing offset value between the controller and digital thermometer is displayed.
8. Calculate the difference in the temperature shown on the controller and the digital thermometer; (e.g. the controller displays 65°C and the digital thermometer displays 63.5°C, the difference is -1.5°C).
9. If the controller display varies by more than one degree (1°C) from the NIST certified digital thermometer, press and hold the SET key and use the up and down arrows to enter the offset value calculated in Step 7 above. For example, if the controller displays a temperature that is 1.5°C higher than the digital thermometer, adjust the offset value to minus 1.5 (-1.5).
10. Press the Infinity Key ( $\infty$ ) to exit calibration. The bath temperature is now calibrated for the set temperature you selected. Check and calibrate the controllers for the remaining baths, as necessary.



*Fig. VII-A-1. Fill bath.*



*Fig. VII-A-2. Set temperature.*



*Fig. VII-A-3. Use thermometer.*



## B. Slide Rack Position Calibration

The instrument is calibrated and tested at the factory for proper rack positioning and should not require adjustment unless a new touchscreen is installed. The following tests check proper alignment. Baths should remain OFF with no liquid needed.

### 1. Bath #1 Loading

- a. Insert standard baths into Baths #1 and #2.
- b. Insert and activate stir bars.
- c. Hold a 12-position rack in Bath #1, aligned with the black lines on the instrument and slightly below the fill line.
- d. Using the touchscreen, press **Control Panel | Advanced Settings | Bath 1 Loading** (Fig. VII-B-1). The gripper arm will move over Bath #1, open and lower. Align the slide rack handle onto the paddle bumps on the open gripper. The gripper will not close.
- e. While continuing to hold the rack on the open gripper, use the left/right and up/down arrows on the touchscreen to position the rack in the center of the bath, above the rotating stir bar such that it does not touch the rotating stir bar.
- f. When finished, remove the rack from the gripper and click Save/Exit to save settings.



Fig. VII-B-1. Calibrate Bath 1 Loading screen.



Fig. VII-B-2. Center Sliderack in Bath 2 screen.

### 2. Bath #2 Center Calibration

- a. Insert standard baths into Baths #1 and #2 with stir bars.
- b. Activate stir bars.
- c. Hold a 12-position rack in Bath #1, aligned with the black lines on the instrument and slightly below the fill line.
- d. Using the touchscreen, press **Control Panel | Advanced Settings | Bath 2 Center** (Fig. VII-B-2). The gripper arm will move over Bath #1, open and lower. Load the slide rack handle onto the paddle bumps on the gripper as it closes. Let go of the rack.
- e. The gripper arm will move the rack to Bath #2 and stop. Verify that the rack is centered in Bath #2. Use the left/right arrows to adjust the position if necessary.
- f. Press Save/Exit when finished.



### C. Centrifuge Loading Calibration

This test ensures the rack is automatically inserted into the sample bucket of the centrifuge.

1. Place a 12-position rack in Bath #1. In the **Advanced Settings** screen, press **C'fuge Loading** (Fig. VII-C-1). Load the rack onto the gripper (Fig. VII-C-1). The gripper will close and then move the rack to the centrifuge. The centrifuge access panel opens automatically and the gripper arm lowers the rack inside, stopping at a set position in the green bucket.
2. Look down through the access panel to verify that the rack is centered from side to side in the bucket. Use the arrow buttons to adjust the position of the arm and centrifuge rotor if needed.
3. Press Save/Exit. The arm will move up and down in the centrifuge and then release the rack. Make sure the rack gently falls into place into the green bucket.



Fig. VII-C-1. Calibrate Centrifuge Loading screen.

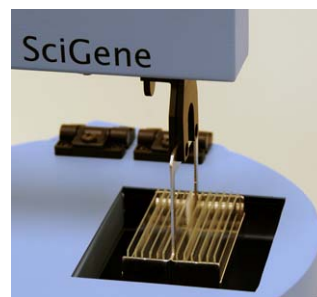


Fig. VII-C-2. Rack loading into centrifuge.

### D. Touch Screen Calibration

If the touchscreen fails to respond to touch, it may need calibration.


1. To access the **Touchscreen Calibration** screen, press the touchscreen while the instrument is powering up.
2. Touch point 1 (Fig. VII-D-1).
3. On the Point 2 screen, touch point 2.
4. On the Point 3 screen, touch point 3 (Fig. VII-D-3).
5. After the Home screen displays, check that the screen now responds to touch. If it does not respond, contact SciGene Technical Service [techserv@scigene.com] or your local distributor.



*Fig. VII-D-1.Touchscreen calibration point 1.*      *Fig. VII-D-2.Touchscreen calibration point 3.*

**VIII. SPECIFICATIONS**

Table 3. Little Dipper Processor Specifications.

Electrical	
Power supply	115V AC, 50/60 Hz; 1700W; 15 Amps (cat. # 1080-XX-1) 230V AC; 50/60 Hz; 1700W; 8 Amps (cat. # 1080-XX-2)
Processing	
Control	Software-controlled by external touchscreen
Slide capacity	Holds up to 24 slides per batch
Centrifuge speed	690 RPM ± 15 RPM
Temperature Control	Range: Ambient: +5 to 90°C (41 to 194°F) Regulation: ± 0.5°C from set point
Bath volumes	Standard: 670 ml Low volume, heatable: 270 ml Low volume: 210 ml
	
Environmental	
Ambient temperature	Operation: +15 to +32°C (58 to 90°F) Storage: -20 to +60°C (-4 to 140°F)
Relative humidity	Operation: 20 to 80% RH non-condensing Storage: 10 to 90% RH non-condensing
Overvoltage category	II
Physical	
Dimensions	51 x 71 x 56 cm (20 x 28 x 22 inches) (H x W x D)
Weight (net)	26.5 kg (59 lbs)

**IX. ORDERING INFORMATION**

Table 4. SciGene Ordering Information for the Little Dipper Processor.

SciGene Cat. #	Product Description	UOM
1080-10-1	Standard Bath, 670 ml.	Each
1080-10-2	Low Volume Bath, 210 ml. Includes a glass insert and stir bar.	Each
1080-10-5	Low Volume Heatable Bath, 275 ml. Includes a glass insert and stir bar.	Each
1080-10-3	Glass Insert for Little Dipper Low Volume Bath, 5/pk.	5/PK
1080-11-0	Stir bars for Little Dipper standard baths, 10/pk.	10/PK
1080-11-1	Stir bars for Little Dipper low volume baths, 10/pk.	10/PK
1080-12-0	Bath cover.	Each
1080-12-1	Bath cover, 5/pk.	5/PK
1080-20-0	Slide Rack, 24-Position for standard 3 inch slides.	Each
1080-20-1	Slide Rack, 12-Position for standard 3 inch slides. Includes handle.	Each
1080-20-2	Slide Rack, 12-Position for Illumina 3.25 inch slides. Includes handle.	Each
1080-20-3	Slide Rack, 24-Position for Illumina 3.25 inch slides.	Each
1080-21-0	Absorbent Pads for Slide Rack Buckets, Hybex and 24-position, 25/pk.	25/PK
1080-21-1	Absorbent Pads for Slide Rack Buckets, 12-Position, 25/pk.	25/PK
1080-22-1	Slide Rack Bucket for Samples, green, Hybex and 24-position racks.	Each
1080-22-2	Slide Rack Bucket for Balance, red, Hybex and 24-position racks.	Each
1080-22-3	Spacer for Rack Bucket, 2/pk, Hybex and 24-position racks.	2/PK
1080-23-1	Slide Rack Bucket for Samples, green, 12-position racks.	Each
1080-23-2	Slide Rack Bucket for Balance, red, 12-position racks.	Each
1080-23-3	Spacer for Rack Bucket, 2/pk, 12-position racks.	PK
1080-24-0	Handle for Hybex or 24-position racks.	Each
1080-31-0	Little Dipper Upgrade Kit for Illumina BeadChips.	Each
1080-41-0	Little Dipper Upgrade Kit for Agilent Arrays.	Each

X. TROUBLESHOOTING

Table 5. Troubleshooting the Little Dipper Processor.

Indication	Probable Cause	Corrective Action
Instrument does not power up.	Power disconnected	Check power connections.
	Main power switch is OFF.	Turn main power switch ON.
	Fuse has blown.	Replace fuse with same type.
Instrument is receiving power but robot will not respond.	Emergency stop button has been activated.	Twist the red EMO button on the side of the instrument to release the emergency stop.
Protocol does not run.	Pause button has been activated.	Press the red pause button on the top of the touch screen.
Bath temperature varies by several degrees from NIST-certified thermometer.	Temperature controller needs to be re-calibrated.	Follow the instructions in section VII. A. <b>Temperature Controller Calibration.</b>
Touchscreen does not respond.	Touchscreen needs calibration	Follow the instructions in section VII. A. <b>Touchscreen Calibration.</b>

Question	Answer
How do I clean the instrument?	Refer to section VI. C. <b>Periodic Maintenance</b> and/or request a “ <i>Periodic Maintenance</i> ” document (Fig. X-1) from Customer Service [custserv@scigene.com].
How do I safely move the instrument?	Request a “ <i>Packing the Little Dipper® Processor</i> ” document (Fig. X-2) from Customer Service [custserv@scigene.com].
How do I get help with a custom protocol?	Request a “ <i>Little Dipper Troubleshooting Questionnaire</i> ” (Fig. X-3) from Customer Service [custserv@scigene.com].



Fig. X-1. Maintenance instructions.



Fig. X-2. Repackaging instructions



Fig. X-3. Troubleshooting questionnaire.

## XI. SERVICE

If the need for service should occur, contact SciGene Technical Services [techserv@scigene.com] or your local distributor.

### A. Lockout Procedure

If a malfunction or need for service occurs, comply with the following lockout procedure for restricting use of the instrument. All users, upon observing that the instrument is locked out for servicing or maintenance shall not attempt to start, energize, or use the equipment.

1. Notify all affected users that servicing or maintenance is required and that the instrument must be shut down and locked out to perform the servicing or maintenance.
2. If the machine is operating, shut it down by the normal stopping procedure (turn off baths and main power or press the EMO switch).
3. Disconnect the power cord from the wall socket and from the instrument so that the machine is isolated from energy sources (Fig. XI-A-1).
4. Twist and remove the fuse (Fig. XI-A-2). Place in a locked safe.
5. Contact SciGene Technical Services [techserv@scigene.com] or your local distributor to arrange for service.



Fig. XI-A-1. Disconnect power cord.

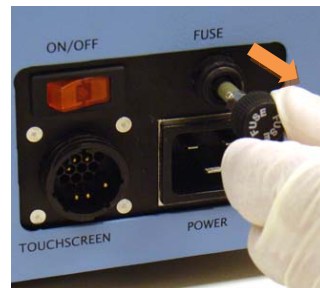


Fig. XI-A-2. Remove fuse.

### B. Fuse Replacement

The fuse may be replaced by turning off and unplugging the unit, then gently twisting and removing the old fuse. Replace with a new fuse with the same electrical rating (250V, 15A for 115V or 250V, 8A for 230V).

✧



**XII. DECLARATION OF CONFORMITY**

**Little Dipper Microarray Processing System, Model 650c**

SciGene  
 617 N. Mary Avenue  
 Sunnyvale, CA 94085 USA



Declares that the above referenced product(s) meets the essential requirements of the following European Union Directives by using the relevant standards shown below to indicate compliance.

**EMC Directive 2004/108/EC**

**EN 61326-1                      2006                      Electrical equipment for measurement, control and laboratory use to include:**

EN 61000-4-2	1995	+A1: 1998 +A2: 2001
EN 61000-4-3	2006	
EN 61000-4-4	2004	
EN 61000-4-6	2007	

**LVD Directive 2006/95/EC**

**EN 60204-1                      2006                      Electrical equipment of machines**  
**EN 61010-1                      2004                      Safety requirements for measurement, control and laboratory use**  
 2<sup>nd</sup> Edition                      **Part 1: General requirements**

Terry Gill  
Name of Authorized Representative

Sunnyvale, California, USA  
Place of Issue

Director of Product Manufacturing  
Title of Authorized Representative

June 2010  
Date of Issue

  
Signature of Authorized Representative