

# Using Mai Tai® Hybridization Cassettes



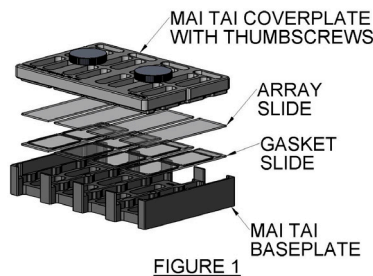
## Equipment Needed

- **Mai Tai® Hybridization System\***, 115v/230v. (SciGene Cat. #1057-00-1/1057-00-2) Includes a Model 777 Microarray Oven, a Mai Tai Rotator and two Mai Tai Cassettes.
  - \*The Mai Tai Rotator and Cassettes are compatible with SciGene Series 700 Microarray Ovens (Models 777 and 700) and Robbins Scientific Model 400 Ovens.
- **Agilent or other microarrays compatible with Agilent gasket slides on 1x3 inch (25x75mm) substrates.**
- **Agilent Hybridization Chamber gasket slides, 5-pack, that match the microarray format used:**
  - **Gasket slides, 1x244K microarrays** (Agilent cat. #G2534-60003)
  - **Gasket slides, 2x105K microarrays** (Agilent cat. #G2534-60002)
  - **Gasket slides, 4x44K microarrays** (Agilent cat. #G2534-60011)

## Mai Tai® Cassette Assembly

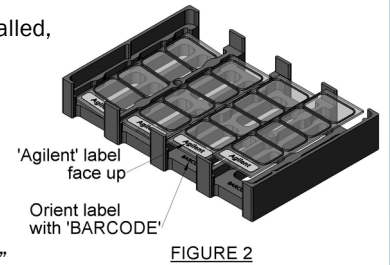
The Mai Tai® Cassette design uses just two parts that simplify set up and disassembly and reduce the risk of errors (Figure 1).

The cassette has a standard microplate footprint so samples may be loaded manually or with robotic liquid handling equipment, such as the **ArrayPrep® Target Preparation System** [SciGene Cat. #2000-00-1 (115v); 2000-00-2 (230v)].



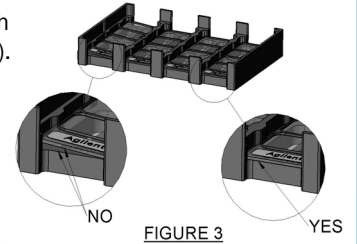
## Using Mai Tai® Hybridization Cassettes

1. With Mai Tai® Rotator installed, pre-heat the hybridization oven to the desired incubation temperature.
2. Place the base plate on a flat surface.
3. Place a **new** gasket slide into each cassette chamber with the “Agilent” label face up and aligned with the “barcode” label (Figure 2).



**⚠** Sample loss has been noted with previously used slides.

**⚠** Place the gasket slide down flat, ensuring the slide does not rest on the edge of the base plate (Figure 3). Practice placing ordinary 1 x 3” (25x75mm) glass slides into the chamber prior to running an experiment.

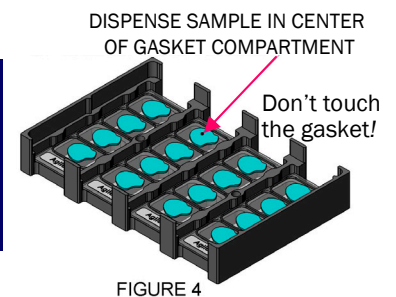


4. Pipette labeled sample into the center of each chamber of the gasket slide using the volumes shown in Table 1.

**⚠** Load samples onto all gasket slides **BEFORE** placing arrays.

**Table 1. Sample Volumes**

Gasket Format	Probe Volume
1x microarray	490 µl
2x microarray	245 µl
4x microarray	100 µl

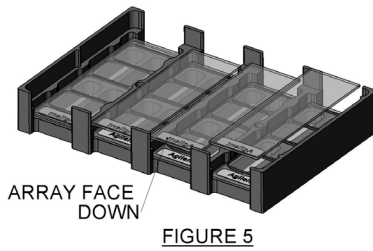


**⚠** To prevent spilling or leaking, dispense hybridization solution to the center of the gasket well without touching the gasket with the pipette tip. Some sample will “wick” over the barrier if it touches the gasket during assembly.

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## Using Mai Tai® Hybridization Cassettes (continued)

5. Holding array at the ends with the array side down and ensuring that the barcode side matches with the one on the gasket slide, bring the array down slowly holding it horizontal to the gasket slide (Figure 5).

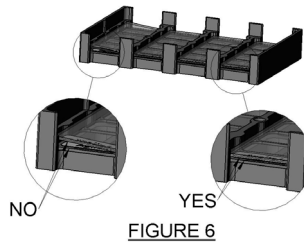


Placing the array evenly onto the gasket slide is crucial to prevent spilling or leakage.



Use Agilent arrays or microarrays from other sources that are compatible with the Agilent gasket slides.

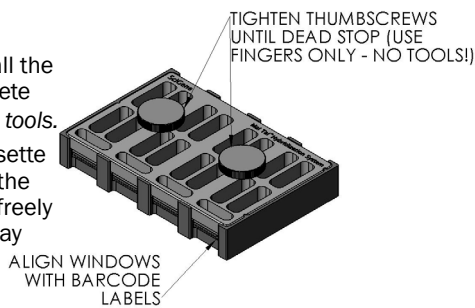
6. When all arrays have been placed, make sure all assemblies are laid flat against the base plate. See Figure 6 for examples of proper and improper placement.



7. Place the cover plate over the arrays with the barcode window matching the barcodes on array. See Figure 7 for correct placement and orientation.

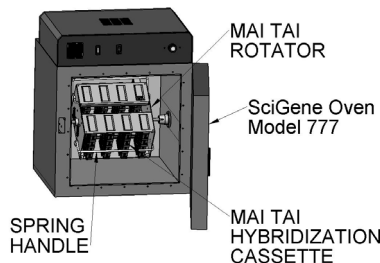
8. Tighten the thumbscrews all the way to a complete stop. Don't use tools.

9. Rotate the cassette to ensure that the bubbles move freely inside each array chamber.




For optimal hybridization, it is best to have a single, large bubble which moves freely around the chamber when rotated. After assembly, ensure there are no stationary bubbles in any array chamber when the assembly is rotated. Stationary bubbles can be released by gently tapping each corner of the assembly on a firm surface as it is rotated.

10. Place the assembly into the Mai Tai® rotator in the pre-heated oven. Raise the spring bar and load the Mai Tai® cassettes into the sleeves of the rotator as shown in Figure 8.



When loading multiple cassettes, load equal number of cassettes on either sides of the rotator to balance weight.

11. Rotate the Mai Tai® Rotator at the speed and time recommended by the microarray manufacturer.
12. At the completion of the incubation period, remove the cassette(s) from the rotator and allow to cool for a few minutes. Loosen thumbscrews and remove the top plate.
13. Remove all array-gasket-slide assemblies from the cassette and place them in wash buffer specified by the array supplier.
-  Place all assemblies into wash buffer before separating any arrays from gasket slides.
14. With all assemblies submerged in wash buffer, separate each array from its gasket slide and place in a slide rack for processing.
15. Wash and dry the microarray(s) on the **Little Dipper® Processor** [SciGene Cat. #1080-40-1 (115v); 1080-40-2 (230v)] or manually using the buffer(s) specified by the supplier.

## Cleaning and Storage of the Mai Tai® Cassette

Hybridization solution may occasionally spill and dry on to the Mai Tai® base and cover plates, making arrays or gasket slides stick to these parts during hybridization. Base plates, cover plates and thumbscrews need to be cleaned periodically to prevent such sticking. Follow the protocol below to clean Mai Tai® parts.

- Disassemble each Mai Tai® cassette (Figure 9) into the base plate, cover plate and thumbscrews. Captive thumbscrews can be unscrewed from the cover plate.
- Using a lint-free wipe soaked in 70% ethanol, wipe all surfaces of base plate, cover plate, thumbscrews and thumbscrew hole carefully to remove dried hybridization solution and salts.
- Allow the clean parts to dry completely by evaporation.
- Assemble the parts back together using the thumbscrews, cover with cling wrap and store in a dry place.



— End Protocol —

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Automating Array Workflows