

# Optimizing Results with Phalanx Biotech Human/Mouse OneArray Microarrays on the MAUI Hybridization System

## Authors

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## Abstract

The MAUI® Hybridization System is comprised of consumable MAUI Mixer Hybridization Chambers and a base unit, which provides Active Mixing™ and maintains a constant incubation temperature. The MAUI Mixer adheres to the microarray slide via an adhesive gasket, forming a uniform, ultra-low volume, sealed hybridization chamber. This chamber clamps into one of the heated slide bays in the base unit, where hybridization takes place. Active Mixing on the concentrated sample provides significant enhancement of sensitivity relative to other manual or automated hybridization methods.

Phalanx Biotech Human/Mouse OneArray™ DNA microarray is made of sense-strand polynucleotide probes spotted onto a proprietary chemical layer coated on top of a 25 mm x 75 mm standard-format microarray glass slide. Each human and mouse microarray contains 32,050 (30,968 human genome/1082 experimental control) and 31,802 (29,922 mouse genome/1880 experimental control) highly sensitive 60-70-mer probes respectively, for monitoring the expression level of corresponding human and mouse protein-coding genes.

This application note provides protocol information for the use of Phalanx Biotech Human/Mouse OneArrays with the MAUI Hybridization System using the MAUI SC Mixer.

## Materials

MAUI Mixer SC Hybridization Chambers	(Cat No. 02-A008-15)
SC Assembly/Disassembly Jig	(Cat No. 02-033-06)
Gasket brayer	(Cat No. 02-054-00)
M-100 Microman Pipette	(Cat No. 01-014-00)
CP-100 Pipette Tips	(Cat No. 01-015-00)
Port Seals	(Cat No. 02-041-00)
1.5 ml Eppendorf Tubes	

## Additional Instructions and Procedures

MAUI Mixer-Slide Assembly Procedure (see MAUI System User's Guide)	(CDP-14)
MAUI Mixer Filling and Sealing Procedure (see MAUI System User's Guide)	(CDP-14)
MAUI Humid Cover Instructions	(CDP-12)

## Methods

This is a modified protocol for using MAUI Hybridization System with Phalanx Biotech Human/Mouse OneArray. For the specifics regarding labeling, hybridization, wash and array imaging analysis, please follow the Phalanx Biotech User Guides for Human/Mouse OneArray microarrays.

Table 1: Hybridization Mixture

Component	Volume
1.5X Hybridization Buffer	30 µl
Sheared Salmon Sperm DNA (10 µg/ul)	0.8 µl
Labeled Target Plus Nuclease-Free H <sub>2</sub> O	14.2 µl
<b>Final Hybridization Mixture Volume</b>	<b>45 µl</b>

1. After target labeling reaction, prepare the hybridization mixture according to the recipe in Table #1 (Human/Mouse OneArray User Guide V3.3, pg. 17).
2. Incubate the hybridization mixture at 95°C for 5 min, then leave on ice for 2 min. Briefly spin and place it at 42°C until ready to load the MAUI Mixer Hybridization Chamber according to the following table:

Note: It is recommended to have at least 8  $\mu$ l more sample than the MAUI Mixer chamber volume and set the pipette to 5  $\mu$ l more than the chamber volume. Chamber volumes may vary slightly from lot to lot. The actual chamber volumes for each MAUI Mixer is indicated on the MAUI Mixer packaging.

MAUI Mixer Hybridization Chamber	MAUI Mixer SC
Chamber Volume	33 – 37 $\mu$ l
Pipette Volume	38 – 42 $\mu$ l
Sample Volume	41 – 45 $\mu$ l
Pipette Tips	CP-100
Sample Tube	1.5 ml

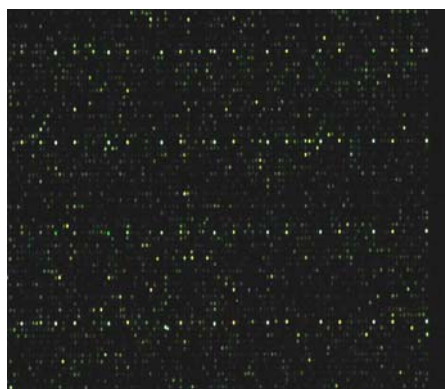
3. Load the MAUI SC Mixer as described in the MAUI Hybridization System User's Guide (CDP-14).
4. After sealing the fill and vent ports with port seals, place the MAUI Mixer-Slide Assembly on a pre-warmed (42°C) MAUI Hybridization System. Close the MAUI Hybridization System lid and hybridize for 4 – 12 hours (4-Bay = Mix Mode B, 12-Bay = Mix Mode A).
5. Following hybridization, disassemble the MAUI Mixer-Slide Assembly under pre-warmed (42°C) Wash Buffer #1.
6. Wash the microarrays following the Human/Mouse OneArray User Guide (V3.3, pg. 20).

Wash I: 42°C/2min, 2X SSPE / 0.1% SDS

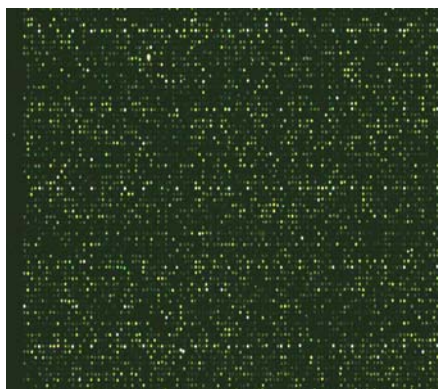
Wash II: Room Temperature/2min, 0.1X SSPE / 0.1% SDS

Wash III: Room Temperature, 0.1X SSPE

## Results



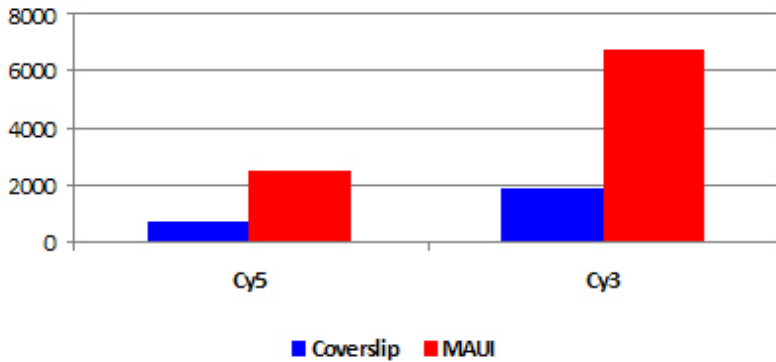
(A) Coverslip Hybridization



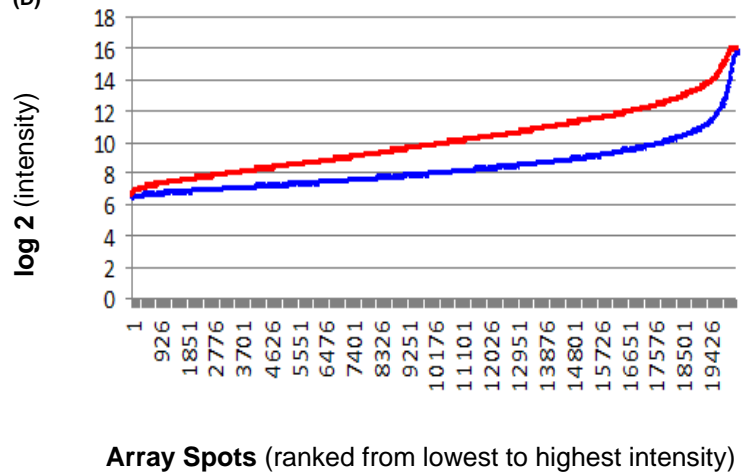
(B) MAUI Hybridization System



(C) **Intensity Avg**



(D)



Phalanx Biotech Mouse OneArrays were hybridized at 42°C for 4 hours with (A) Corning Coverslip Hybridization Chamber and (B) MAUI Hybridization System with MAUI Mixer SC. (C/D) The MAUI Hybridization System yields significantly higher signal intensity compared to coverslip hybridization as seen by the Cy3/Cy5 intensity average and Log2 plot.

- Data & analysis courtesy of Dr. Luke Sherlin and Mr. Leon Lu of Phalanx Biotech

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For more information about Phalanx Biotech OneArray Human and Mouse whole genome microarrays, please visit [onearray.com](http://onearray.com)

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