



Summary of the 2nd MAQC Project Meeting

The MAQC Project: Microarray QC Metrics and Thresholds

Meeting Date: February 25, 2005, 11:00 am CST, teleconference
 Summary Date: March 1, 2005
 Author: Leming Shi, FDA/NCTR, 870-543-7387, leming.shi@fda.hhs.gov

FIVE (5) WORKING GROUPS

The following five working groups were established to coordinate the MAQC study:

Working Group	Coordinator	Contact Information	Responsibility
RNA	James Fuscoe	Division of Systems Toxicology, FDA/NCTR, 3900 NCTR Rd., HFT-130, Jefferson, AR 72079. 870-543-7126, 870-543-7682(F), james.fuscoe@fda.hhs.gov .	Selecting two RNA samples
Microarray	Uwe Scherf	Division of Microbiology Devices, FDA/CDRH/OIVD, OAK8, RM366, HFZ-440, 2098 Gaither Road, Rockville, MD 20850. 240-276-0496 Ext. 164, 301-594-5941(F), uwe.scherf@fda.hhs.gov	Designing the main study; generating microarray datasets
qRT-PCR	Federico Goodsaid	Office of Clinical Pharmacology and Biopharmaceuticals, FDA/CDER, HFD-860, 2078 Woodmont II Office Complex, 1451 Rockville Pike, Rockville, MD 20852. 301-827-5442, 301-480-6645(F), federico.goodsaid@fda.hhs.gov	Selecting 1000 genes for qRT-PCR; generating qRT-PCR datasets
Scanner	Raj Puri / Jing Han	Division of Cellular and Gene Therapies, FDA/CBER/OCTGT, NIH Bldg N29B, Rm 2NN16, HFM-735, 29 Lincoln Drive, Bethesda, MD 20892. 301-827-1801, 301-827-0449(F), jing.han@fda.hhs.gov	Comparing the performances of commonly used microarray scanners
Bioinformatics	Leming Shi	Division of Systems Toxicology, FDA/NCTR, 3900 NCTR Rd., Jefferson, AR 72079. 870-543-7387, 870-543-7382(F), leming.shi@fda.hhs.gov .	Managing, sharing and analyzing data

If you are interested in participating in the working groups, please contact the respective WG coordinator directly (and cc to me at leming.shi@fda.hhs.gov).

SIX (6) TEST SITES FOR THE PILOT STUDY

Platform	Test Site	Contact	Shipping Address and Contact Information
Affymetrix (U133 Plus2.0)	Affymetrix	Chunmei Liu	3380 Central Expressway, Santa Clara, CA 95051. 408-731-5502, 408-481-0422(F), chunmei.liu@affymetrix.com
	Ambion	Mike Wilson Sean Banks	2130 Woodward St., Austin, TX 78744. 800-888-8804 or 512-651-0200 x6236, 512-651-0201(F), mwilson@ambion.com
Agilent (G4112A)	Agilent	Jim Collins	3500 Deer Creek Road, MS 25U-7, Palo Alto, CA 94304. 650-485-5048, 650-485-8670(F), jim.collins@agilent.com
	FDA/NCTR	Tucker Patterson	Division of Neurotoxicology, HFT-132, FDA/NCTR, 3900 NCTR Rd., Jefferson, AR 72079. 870-543-7427, 870-543-7745(F), tucker.patterson@fda.hhs.gov
GE Healthcare (300026-6PK)	Ambion	Mike Wilson Sean Banks	2130 Woodward St., Austin, TX 78744. 800-888-8804 or 512-651-0200 x6236, 512-651-0201(F), mwilson@ambion.com
	U Mass Boston	Michael Lombardi	Microarray Suite, Center for Environmental Health, Science and Technology, University of Massachusetts Boston, 100 Morrissey Boulevard, S-4-023, Boston, MA 02125. 617-287-6084, 617-287-6053(F), mlombardi@rics.bwh.harvard.edu
Illumina (Sentrix® Human-6)	Illumina	Shawn Baker	9885 Towne Centre Drive, San Diego, CA 92121. 858-202-4597, 858-202-4680(F), scbaker@illumina.com

For information regarding GE Healthcare's arrays, contact Richard Shippy, GE Healthcare, Molecular Diagnostics, 3200 W. Germann Rd., Chandler, AZ, 85248. 480-722-2339, Richard.Shippy@ge.com.

DISTRIBUTION OF SIX (6) CANDIDATE RNA SAMPLES

1. Clontech ships 100µg of Universal Human Reference RNA (636538) to each test site, plus 800 µg to Ambion for mixing with Stratagene's UHRR *by March 3, 2005. (Sample A)*
2. Stratagene ships 100µg of Universal Human Reference RNA (7400000) to each test site, plus 200µg to Ambion for mixing with Clontech's UHRR *by March 3, 2005. (Sample B)*
3. Ambion mixes 800µg of Clontech UHRR with 200µg of Stratagene UHRR, and ships 100µg of the mixed UHRR to each test site *by March 7, 2005. (Sample C)*
4. Ambion ships 100µg of Human Brain RNA (cat#?) to each test site *by March 7, 2005. (Sample D)*
5. Ambion ships 100µg of Human Liver RNA (cat#?) to each test site *by March 7, 2005. (Sample E)*
6. Ambion ships 100µg of mixed Human Brain and Liver (20:80) RNA (cat#?) to each test site *by March 7, 2005. (Sample F)*

Each test site should conduct RNA QC upon receipt of samples and submit QC data.

Contact Information of RNA Providers

RNA Provider	Contact Person	Shipping Address and Contact Information
Ambion	Mike Wilson Sean Banks	2130 Woodward St., Austin, TX 78744. 800-888-8804 or 512-651-0200 x6236, 512-651-0201(F), mwilson@ambion.com
Clontech	Laurence Lamarcq	1020 East Meadow Circle, Palo Alto, CA 94303. 650-739-7301, 650-354-0776(F). laurence_lamarcq@bd.com
Stratagene	Garvin Fisher	11011 North Torrey Pines Road, La Jolla , CA 92037. 858-535-5400 x13075, 858-535-0071(F), gavin.fischer@stratagene.com

DISTRIBUTION OF ARRAYS

1. Affymetrix ships 60 arrays (U133 Plus2.0) to Ambion *by March 7, 2005.*
2. Agilent ships 60 arrays (G4112A) to FDA/NCTR *by March 7, 2005.*
3. GE Healthcare ships 60 arrays (300026-6PK) to Ambion *by March 7, 2005.*
4. GE Healthcare ships 60 arrays (300026-6PK) to U Mass Boston *by March 7, 2005.*

GENERATION OF MICROARRAY DATA

- For one-color platforms, each of the six samples will be processed in 10 replicates (with separate synthesis and labeling reactions) at each test site, resulting in a total of 60 hybridizations per platform per test site.
- For the two-color (Agilent) platform, details of experimental design are being determined between Agilent and FDA/NCTR.
- Each platform provider and its test sites should discuss with each other to decide on a common protocol.

TENTATIVE TIMELINE OF THE PILOT STUDY

<u>Task</u>	<u>Completion Date</u>
RNA sample distribution:	March 3, 2005 (for Clontech/Stratagene's UHRR to Ambion) March 7, 2005 (for shipping RNA samples to all test sites)
Array distribution:	March 7, 2005 (for Affymetrix, Agilent and GE Healthcare)
3 rd teleconference:	March 11, 2005

4rd teleconference: March 25, 2005
 Array processing: **April 1, 2005**
 Data sent to FDA/NCTR: **April 1, 2005**
 5th teleconference: April 8, 2005
 Data-sharing with test sites: April 8, 2005
 Data analysis: April 22, 2005
 6th teleconference: April 22, 2005
 Face-to-face meeting: **April 29, 2005** (tentative, DC or CA)
 (Selection of two RNA samples and design of the Main Study)
 MAQC Main study: May-July, 2005 (Generation of microarray and qRT-PCR data)
 October, 2005 (Face-to-face project meeting, DC or CA)

CRITERIA FOR RNA SAMPLE SELECTION

The purpose of the Pilot Study is to generate microarray data (regarding gene coverage and ratio range) to aid the selection of two RNA samples to be used in the Main Study. The following criteria have been proposed:

1. Available in large quantity
2. Reproducibility in production
3. High quality
4. Accessibility (commercial source)
5. Wide gene presence
6. Large fold changes for a number of genes
7. The two RNA samples should not be selected from the same RNA provider.

Notes:

- Criteria 1-6 were listed in slide #5 of Leming Shi's presentation on February 11, 2005.
- Criterion 7 has been added after concerns were raised regarding the possibility of dominance by one RNA provider.
- All MAQC participants are invited to suggest other criteria that should be considered in the selection of the two RNA samples.
- It must be made clear that the six candidate RNA samples (A-F) should be treated equal and independent to each other. The best combination of any two candidates (according to the selection criteria) will be selected for the Main Study.
- It must also be stressed that only two samples (from the six candidates) will be selected for the Main Study.
- Assessment of "accuracy" is not the goal of the Pilot Study and should not be used as a criterion for RNA sample selection.
- At the 3rd MAQC teleconference (March 11, 2005, 11:00 am CST tentative), a formula for RNA sample selection (based on the proposed criteria) will be discussed.