Summary of the 3rd MAQC Project Meeting

The MAQC Project: Microarray QC Metrics and Thresholds

Meeting Date: March 11, 2005, 11:00 am CST, teleconference
Summary Date: March 14, 2005
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RNA and Array Distribution

All Pilot Study test sites have received the four candidate RNA samples (Ambion Brain, Ambion Liver, Clontech UHRR and Stratagene UHRR) and arrays (except for GE CodeLink arrays which will be shipped on Monday, March 14, 2005).

Criteria for RNA Sample Selection

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.

Questions were raised whether these criteria should be prioritized (or weighted).

Analysis of Pilot Study Data

- It was agreed that all array providers, RNA sample providers and test sites should be given full access to all datasets generated from the Pilot Study. Therefore, 10 organizations (Affymetrix, Agilent, Ambion, Applied Biosystems, Clontech, FDA/NCTR, GE Healthcare, Illumina, Stratagene, and UMass Boston) will have access to the 7 datasets (one dataset from Affymetrix, Agilent, FDA/NCTR, Illumina and UMass Boston, and two datasets from Ambion).
- It was agreed and emphasized that no organization should make any public presentation and/or publication of the Pilot Study results without the consent of the MAQC project.
- No test site expressed difficulty in submitting its microarray data (non-normalized and normalized) to FDA/NCTR by April 1, 2005. FDA/NCTR will make all 7 datasets available to the 10 organizations mentioned above before April 8, 2005.
- Each of the 10 organizations will conduct its independent analysis of the 7 datasets with its own preferred procedures in order to rank the four candidate RNA samples by gene coverage and to rank the six two-sample pairings by ratio dynamic range. Each organization is expected to provide its analysis results in a summary format shown in Tables 1 and 2. Thus, each RNA sample or pairing will be scored 70 times (10 organizations x 7 datasets). A consensus ranking will be reached to determine the gene coverage of the 4 candidate RNA samples and the 6 sample pairings.
- Each of the 6 test sites should also provide quality ranking of the 4 candidate RNA samples.

Face-to-Face Meeting to Discuss Pilot Study Results

It turned out that the originally proposed meeting date of April 29, 2005 was not a good option for many FDA participants. Therefore, two new optional dates have been proposed:

- **Monday, April 25, 2005** (with possible extension to the morning of April 26)
- **Monday, May 2, 2005** (with possible extension to the morning of May 3)

This meeting will be hosted at **FDA/CDER, Rockville, MD** (thanks to Felix and Federico!) with the following goals: (1) select two RNA samples; (2) design the Main Study; and (3) select 1000 genes for QRT-PCR.

Table 1. Ranking of RNA samples by the gene coverage

RNA	Ranking RNA samples according to gene coverage using dataset:							Average ranking
	I	II	III	IV	V	VI	VII	
A	x	x	x	x	x	x	x	x
B	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x
D	x	x	x	x	x	x	x	x
For each dataset, the four RNA samples will be ranked from 1 (most favorable) to 4 (least favorable) to assess the gene coverage.								

Table 2. Ranking of RNA sample pairings by the ratio coverage

RNA Pairing	Ranking RNA sample pairings according to ratio range using dataset:							Average ranking
	I	II	III	IV	V	VI	VII	
1. A-B	y	y	y	y	y	y	y	y
2. A-C	y	y	y	y	y	y	y	y
3. A-D	y	y	y	y	y	y	y	y
4. B-C	y	y	y	y	y	y	y	y
5. B-D	y	y	y	y	y	y	y	y
6. C-D	y	y	y	y	y	y	y	y
For each dataset, the six RNA sample pairings will be ranked from 1 (most favorable) to 6 (least favorable) to assess the ratio coverage.								

Designation of RNA samples:

A. Ambion Brain RNA;
B. Ambion Liver RNA;
C. Clontech UHRR;
D. Stratagene UHRR.

Designation of microarray datasets:

I. Affymetrix platform data from Affymetrix;
II. Affymetrix platform data from Ambion;
III. Agilent platform data from Agilent;
IV. Agilent platform data from FDA/NCTR;
V. GE Healthcare platform data from Ambion;
VI. GE Healthcare platform data from UMass Boston;
VII. Illumina platform data from Illumina.