

Rice Genome OneArray® DNA Microarray

- Superior Coverage for *Oryza sativa* – Japonica & Indica varieties
- Superior Hybridization Performance through Isothermal Probe Design
- Excellent Reproducible Data (CV < 6%)
- High Correlation with Real-Time PCR
- Exceptional Array Consistency using Non-Contact ThermoJet Printing

Genome Content

Each microarray contains 22,003 oligonucleotides: 21,179 rice genome probes + 824 experimental control probes. Genes curated from the most studied Gene Ontology categories.

Rice OneArray content is based on the Rice Genome Annotation Project (RGAP) version 6.1 and Beijing Genomics Institute (BGI) version 2008 databases. Long oligonucleotide probes (~60-mers) were engineered for superior hybridization performance using an isothermal probe design. Table 1 (right) provides a summary of the probe content of Rice OneArray.

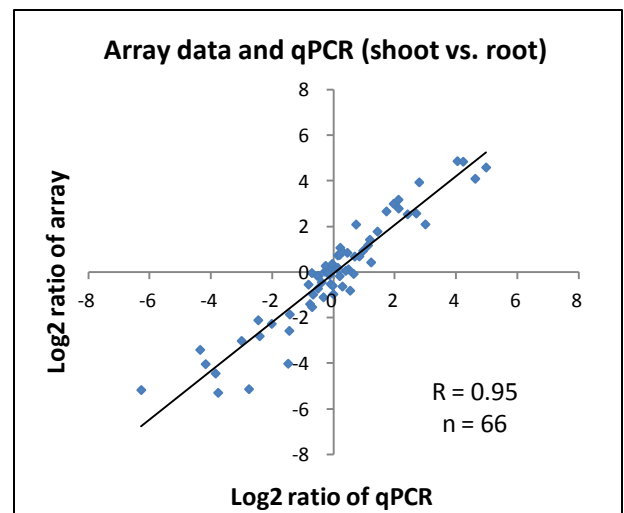
The most up-to-date annotation, GAL files, and probe sequences can be obtained at www.OneArray.com.

Table 1: Rice OneArray® Probe Content	
Source	Probe Number
Total Probes	22,003 (total) ¹
Rice Genome Annotation Project ver. 6.1 Beijing Genomics Institute ver. 2008	21,179
Control Probes	824
Oligonucleotide probe length	~60-mer

Rice OneArray® Performance

To assess OneArray performance, rice microarray data was validated by qPCR on reference shoot and root RNA samples. 66 genes were randomly selected from the linear detection range of the microarray dataset and compared to qPCR results. An excellent correlation to qPCR ($R = 0.95$) was demonstrated, offering strong assurance of high-fidelity in microarray studies.

Figure 1, right, shows the log₂ ratios of reference rice shoot to root RNA samples with qPCR and microarray data represented on the x- and y-axes, respectively.



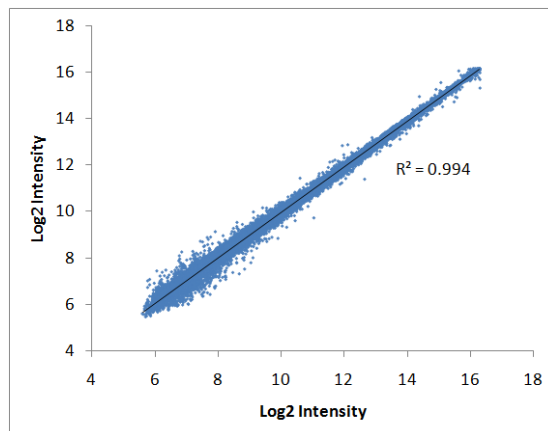
¹ Rice OneArray® is guaranteed to have >98% of the total probe content printed.

Signal Reproducibility & Probe Content

Array to Array consistency

Robust comparisons of experimental datasets require high performance with respect to array-to-array consistency and reproducibility. Like other members of the OneArray product family, Rice OneArray exceeds strict manufacturing and QC benchmarks. Figure 2 shows a representative scatter plot of pair-wise log₂ intensity ratios with a fitted correlation of $R^2 = 0.994$.

Functional QC tests were performed using rice RNA from reference shoot (S) and root (R), whereby each sample was hybridized onto 5 microarrays. Pair-wise comparisons of spot intensities demonstrate unmatched array-to-array signal reproducibility with CV < 9% and 4%, respectively. Pearson's correlations are shown in Table 2, below.

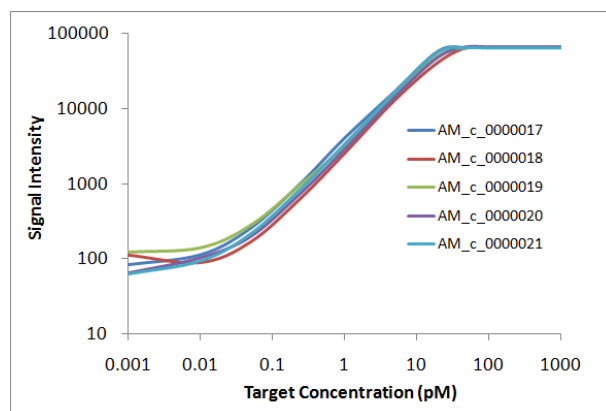


	S1	S2	S3	S4	S5	R1	R2	R3	R4	R5
S1	1.000	0.989	0.987	0.986	0.985	0.670	0.673	0.674	0.675	0.672
S2	0.989	1.000	0.991	0.985	0.988	0.678	0.678	0.681	0.682	0.678
S3	0.987	0.991	1.000	0.987	0.988	0.681	0.679	0.683	0.681	0.678
S4	0.986	0.985	0.987	1.000	0.983	0.667	0.673	0.671	0.675	0.671
S5	0.985	0.988	0.988	0.983	1.000	0.674	0.679	0.677	0.681	0.677
R1	0.670	0.678	0.681	0.667	0.674	1.000	0.984	0.994	0.987	0.983
R2	0.673	0.678	0.679	0.673	0.679	0.984	1.000	0.987	0.993	0.985
R3	0.674	0.681	0.683	0.671	0.677	0.994	0.987	1.000	0.990	0.985
R4	0.675	0.682	0.681	0.675	0.681	0.987	0.993	0.990	1.000	0.986
R5	0.672	0.678	0.678	0.671	0.677	0.983	0.985	0.985	0.986	1.000

Sensitivity and Dynamic Range

Sensitivity and dynamic range define the lowest and highest boundaries of signal intensity obtained from a microarray that can accurately reflect the difference in the amounts of target in a sample. It is understood that many factors, including probe design, composition of the hybridization buffer, surface chemistry, and other factors can affect the sensitivity and dynamic range of the microarray.

Ambion ArrayControl™ Spots are incorporated into the Rice OneArray microarray, and spike-ins were used to assess the sensitivity and dynamic range. Results showed detectable signals from 0.05 pM and a dynamic range of 3 orders of magnitude.



Related Microarray Products & Service

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Power of OneArray®