



Data Sheet

GeneChip® Rice Genome Array

The GeneChip® Rice Genome Array contains probe sets to detect transcripts from all the high-quality expressed sequence from the entire rice genome which includes 51,279 transcripts representing two rice cultivars. This unique design was created within the Affymetrix GeneChip® Consortia Program and provides scientists with a single array that can be used for the study of rice genomics.

The Rice Genome Array contains approximately 48,564 japonica transcripts and 1,260 transcripts representing the indica cultivar. Sequence information for this array includes public content from UniGene Build #52 (May 7, 2004), GenBank® mRNAs (July 13, 2004), and 59,712 gene predictions from TIGR's osa1 version 2.0 release. The availability of high-quality genome annotations from TIGR were utilized to ensure the inclusion of all known rice genes, and to refine the clustering and assembly of ESTs from both japonica and indica cultivars.

Power of the Probe Set—The key advantage of GeneChip technology is that each high-density array contains multiple probe pairs per probe set, providing multiple independent measurements for each transcript.

Introduction

For almost two-thirds of the world's population, rice (*Oryza sativa*) is the main source of nutrition. Due to growing demands for rice, scientists are exploring how to increase both the yield and nutritional value of rice in areas of the world where hunger and drought prevail.

To address the importance of rice as a model for biological research, Affymetrix developed the GeneChip® Rice Genome Array through the GeneChip® Consortia Program. The GeneChip Rice Genome Array contains sequences from the two most common rice cultivars, indica and japonica. Subsequently, the rice array will provide scientists with a single array that can be used to simultaneously characterize thousands of rice genes.

Applications

The GeneChip® Rice Genome Array will enable researchers to study whole-genome expression profiles in an important model organism for monocots and cereal crops. Its relatively small genome combined with well-developed physical and genetic maps and ease of transformation make this a very tractable organism for molecular and genetic analysis of crop improvement traits, developmental biology, and environmental responses. The representation of both indica and japonica cultivars of rice will increase the utility of this microarray for a broad international community of scientists.

Array Profile

The GeneChip® Rice Genome Array offers

Critical Specifications

Number of probe sets, <i>O. sativa</i> (indica cultivar group)	1,347
Number of transcripts, <i>O. sativa</i> (indica cultivar group)	1,260
Number of probe sets, <i>O. sativa</i> (japonica cultivar group)	54,168
Number of transcripts, <i>O. sativa</i> (japonica cultivar group)	48,564

Number of arrays in set	One
Array format	49
Feature size	11 µm
Oligonucleotide probe length	25-mer
Probe pairs/sequence	11
Hybridization controls:	<i>bioB</i> , <i>bioC</i> , <i>bioD</i> from <i>E. coli</i> and <i>cre</i> from P1 Bacteriophage
Poly-A controls:	<i>dap</i> , <i>lys</i> , <i>phe</i> , <i>thr</i> , <i>trp</i> from <i>B. subtilis</i>
Housekeeping/Control genes:	Rice genes from the commercial GeneChip TEST3 Array, including GAPDH, Actin, cyclophilin 1, Ubiquitin, 18S rRNA, and 27S rRNA. Additionally, there are newly selected control probe sets for Actin, ef1a, GAPDH, 25S rRNA, 18S rRNA, 5.8S rRNA from <i>Oryza sativa</i> ; and Actin, ef1a, and GAPDH from <i>M. grisea</i> .
Detection sensitivity	1:100,000*

* As measured by detection in comparative analysis between a complex target containing spiked control transcriptions and a complex target with no spikes.

Supporting Products

Part Number	Product Name	Description
900493	One-Cycle Target Labeling and Control Reagents ¹	Sufficient for 30 reactions. Contains: <ul style="list-style-type: none">• IVT Labeling Kit• One-Cycle cDNA Synthesis Kit• Sample Cleanup Module• Poly-A RNA Control Kit• Hybridization Controls
900494	Two-Cycle Target Labeling and Control Reagents ^{1,2}	Sufficient for 30 reactions. Contains: <ul style="list-style-type: none">• IVT Labeling Kit• Two-Cycle cDNA Synthesis Kit• Sample Cleanup Module• Poly-A RNA Control Kit• Hybridization Controls

¹Individual Kit components may be ordered separately.

²For the intermediate IVT step with unlabeled nucleotides, please order the MEGAscript[®] T7 Kit directly from Ambion.

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researchers the most comprehensive and informative content for rice expression research. The design of the array was based on public content from UniGene Build #52 (May 7, 2004), GenBank[®] mRNAs (July 13, 2004), and 59,712 gene predictions from TIGR's osal version 2.0 release. The GeneChip Rice Genome Array was developed through the GeneChip Consortia Program. The efforts of the International Rice Genome Sequencing Project (IRGSP) are gratefully acknowledged, and the arrays were designed and manufactured with standard Affymetrix protocols.

Instrument Software Requirements

- GeneChip[®] Scanner 3000, enabled for High-Resolution Scanning*
- GeneChip[®] Operating Software (GCOS) v1.1 or higher, which contains the High-Resolution Scanning Update

*GeneChip Scanner 3000 High-Resolution Update is standard on all instruments shipped starting in September 2003 with serial number series 502. Previous versions (serial number series 501) will require the 00-0110 GeneChip Scanner 3000 High-Resolution Update to be installed.

Ordering Information

GeneChip[®] Rice Genome Array

GeneChip[®] Rice Genome Array

900599 Contains 2 Arrays

900600 Contains 6 Arrays

900601 Contains 30 Arrays



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