AFFYMETRIX®

Data Sheet

GeneChip® Yeast Genome 2.0 Array

The GeneChip® Yeast Genome 2.0 Array contains probe sets to detect transcripts from both *Saccharomyces cerevisiae* and *Schizosaccharomyces pombe*, which are the two most commonly studied species of yeast. Providing comprehensive coverage of both species, the GeneChip Yeast Genome 2.0 Array includes approximately 5,744 probe sets for 5,841 of the 5,845 genes present in *S. cerevisiae* and 5,021 probe sets for all 5,031 genes present in *S. pombe*.

The evolutionary divergence between *S. cerevisiae* and *S. pombe* over 500 million years ago caused enough sequence divergence between the two species to require selection of separate probe sets for all genes, even the closest cross-species orthologs. Because both species are included on a single array, the GeneChip Yeast Genome 2.0 Array provides a flexible and affordable platform for researchers studying *S. cerevisiae*, *S. pombe*, or both species.

The sequence information for this array was selected from public data sources GenBank® (May 2004) and Sanger Center (June 2004) for the *S. cerevisiae* and *S. pombe* genomes, respectively. Probe sets on the array include 11 oligonucleotide pairs to detect each transcript.

Applications

Using comparative genomics to model biochemical and genetic pathways is a powerful approach to understand biology. Although yeast is unicellular, it is an ideal model organism for studying eukaryotic cellular and disease processes. The shorter cell cycle of the yeast compared to higher eukaryotes makes it easier to observe cell processes, study biochemical functions, and screen compounds. *Saccharomyces cerevisiae*—or budding yeast—is easy to manipulate *in vitro* and is commonly used to determine the biological functions of genes and regulatory elements. Its high degree of homology with the human genome has made *Saccharomyces cerevisiae* a key model organism for understanding the function of certain human genes.

Additionally, *S. cerevisiae* is an important organism for identifying pathways required for fungal survival in the mammalian host environment and for studying phenotypic variation and instability.

A favorite tool of many research groups around the world, the fission yeast—*Schizosaccharomyces pombe*—is a fundamental model for studying differential gene regulation, cell-cycle control, signal transduction, cellular morphogenesis, and genome organization. Sequencing by the Sanger Center revealed that 172 *S. pombe* proteins were similar to those involved in human diseases with 50 showing high homology and approximately 20 having relevance for cancer genetics (Wood V., Gwilliam R., *et al*.).

The GeneChip® Yeast Genome 2.0 Array enables thorough examination of gene expression patterns of both *S. cerevisiae* and *S. pombe* under various conditions for a better understanding of biological pathways. Finally, the detailed pattern of gene expression offered by the GeneChip® Yeast Genome 2.0 Array can help researchers optimize culture conditions to improve yields of recombinant proteins in metabolite production.

Array Profile

The GeneChip Yeast Genome 2.0 Array is a 169-format, 11-micron array design, and it contains 11 probe pairs per probe set. Content for the array was selected from public data sources GenBank® (May 2004) and Sanger Center (June 2004) for the *S. cerevisiae* and *S. pombe* genomes, respectively.

Critical Specifications

Number of probe sets, *Saccharomyces cerevisiae*	5,744
Number of transcripts, *Saccharomyces cerevisiae*	5,841
Number of probe sets, *Schizosaccharomyces pombe*	5,021
Number of transcripts, *Schizosaccharomyces pombe*	5,031
Number of arrays in set	one
Array format	169
Feature size	11 µm
Oligonucleotide probe length	25-mer
Probe pairs/sequence	11
Hybridization controls: Poly-A controls: Housekeeping/Control genes:	*bioB, bioC, bioD*, from *E. coli* and *cre* from P1 Bacteriophage *dap, lys, phe, thr, trp* from *B. subtilis* GAPDH, Actin, EAF5, SRB4, tfIId, RIP1, URA3, and WBP1
Detection sensitivity	1:100,000[1]

[1]As measured by detection in comparative analysis between a complex target containing spiked control transcriptions and a complex target with no spikes

Instrument Software Requirements

- GeneChip® Scanner 3000, enabled for High-Resolution Scanning*
- GeneChip® Operating Software (GCOS) v1.1.1, 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.

REFERENCE

Wood V., Gwilliam R., *et al*. The genome sequence of *Schizosaccharomyces pombe*. *Nature* 415:817-880 (2002).

Supporting Products

Part Number	Product Name	Description
900493	GeneChip® One-Cycle Target Labeling and Control Reagents[1]	Sufficient for 30 reactions. Contains: · IVT Labeling Kit · One-Cycle cDNA Synthesis Kit · Sample Cleanup Module · Poly-A RNA Control Kit · Hybridization Controls
900494	GeneChip® Two-Cycle Target Labeling and Control Reagents[1,2]	Sufficient for 30 reactions. Contains: · IVT Labeling Kit · Two-Cycle cDNA Synthesis Kit · Sample Cleanup Module · Poly-A RNA Control Kit · Hybridization Controls

[1] *Individual Kit components may be ordered separately.*

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

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Ordering Information

GeneChip® Yeast Genome 2.0 Array

GeneChip® Yeast Genome 2.0 Array

900553 *Contains 2 arrays*

900554 *Contains 6 arrays*

900555 *Contains 30 arrays*

To Order

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