



Data Sheet

GeneChip® Wheat Genome Array

The GeneChip® Wheat Genome Array contains 61,127 probe sets representing 55,052 transcripts for all 42 chromosomes in the wheat genome. By providing comprehensive coverage of the wheat genome, the GeneChip Wheat Genome Array is an important tool for plant genetics and crop improvement.

Sequence information for this array includes public content from *Triticum aestivum* UniGene Build #38 (build date April 24, 2004). Also included are ESTs from the wheat species *T. monococcum*, *T. turgidum*, and *Aegilops tauschii*, and GenBank® full-length mRNAs from all species through May 18, 2004.

T. aestivum, the hexaploid bread wheat, contains three genomes: A, B, and D. *Triticum turgidum*, the tetraploid macaroni wheat species, contains the ancestral A and B genomes, whereas the diploids *T. monococcum* and *A. tauschii* contain near relatives of the A and D genomes, respectively. Thus, available content for the modern bread wheat species' three ancestral genomes is included.

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.

Applications

The GeneChip® Wheat Genome Array was created within the Affymetrix GeneChip® Consortia Program and provides scientists with a single array which can be used for gene expression studies in these wheat species.

The array is useful for gaining a better understanding of the wheat genome for studies on how to improve nutritional value, enhance crop yield, and develop innovative approaches to feeding a growing world population.

The array is also useful to study the effects of different environmental stresses on wheat (for example frost, cold, heat, drought, poor soil composition) with the eventual goal of crop improvement through increasing tolerance to these conditions.

Array Profile

The GeneChip® Wheat Genome Array offers researchers the most comprehensive and informative content for wheat gene expression research. The design of the array was based on public content from GenBank® and dbEST. The GeneChip Wheat Genome Array was developed through the Affymetrix GeneChip Consortia Program. Experts in wheat research provided high-quality sequence data and the arrays were designed and manufactured with standard Affymetrix protocols.

Instrument Software Requirements

- GeneChip® Scanner 3000, enabled for High-Resolution Scanning*

Critical Specifications

| Class | Organism | Probe Set Count | Transcript Count | UniGene Count |
|------------------------------|---------------------------------|---|------------------|---------------|
| Control | <i>T. aestivum</i> | 12 | 3 | 2 |
| Main | <i>A. tauschii</i> | 5 | 4 | 0 |
| Main | <i>T. aestivum</i> | 59356 | 53474 | 19729 |
| Main | <i>T. monococcum</i> | 1215 | 1085 | 372 |
| Main | <i>T. turgidum</i> | 147 | 136 | 37 |
| Main | <i>T. turgidum subsp. durum</i> | 392 | 350 | 174 |
| Reporter | | 64 | 57 | 0 |
| 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: | | Wheat genes from the commercial GeneChip® TEST3 Array, including Ubiquitin, 18S rRNA, G-6-PDH, cytochrome P450, and sucrose synthase. Additionally, there are newly selected control probe sets for actin, ef1a, and GAPDH. | | |
| 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.

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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- 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.

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Ordering Information

GeneChip[®] Wheat Genome Array

GeneChip[®] Wheat Genome Array

900558 Contains 2 Arrays

900559 Contains 6 Arrays

900560 Contains 30 Arrays

To Order

North America

888-DNA-CHIP 888-362-2447

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