

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 Wheat Genome Array is an important tool for plant genetics and crop improvement.

Applications

The Wheat Genome Array was created within the Affymetrix GeneChip® Consortia Program and provides scientists with a single array that can be used for gene expression studies in several 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 for studying 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 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. Experts in wheat research provided high-quality sequence data and the arrays were designed and manufactured with standard Affymetrix protocols.

Sequence information for this array includes public content from UniGene. Also included are ESTs from the wheat species *Triticum monococcum*, *Triticum turgidum*, and *Aegilops tauschii*, and GenBank® full-length mRNAs from all species.

T. aestivum, the hexaploid bread wheat, contains three genomes: A, B, and D. *T. 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.

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>	59,356	53,473	19,729
Main	<i>T. monococcum</i>	1,215	1,085	372
Main	<i>T. turgidum</i>	147	136	37
Main	<i>T. turgidum</i> subsp. <i>durum</i>	392	350	174
Reporter		64	57	0
Array format		49		
Feature size		11 µm		
Oligonucleotide probe length		25-mer		
Probe pairs per sequence		11		
Hybridization controls		<i>bioB</i> , <i>bioC</i> , <i>bioD</i> from <i>Escherichia 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>Bacillus subtilis</i>		
Housekeeping/control genes		Wheat genes from the commercial GeneChip® Test3 Array, including ubiquitin, 18S rRNA, glucose-6-phosphate dehydrogenase, cytochrome P450, and sucrose synthase. Additionally, there are selected control probe sets for actin, ef1a, and GAPDH.		
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.

Instrument/software requirements

- GeneChip[®] Scanner 3000
- Affymetrix[®] GeneChip[®] Command Console[®] Software (AGCC)

Ordering information

Part number	Description
GeneChip[®] Wheat Genome Array	
900558	Contains 2 arrays
900559	Contains 6 arrays
900560	Contains 30 arrays

Supporting products

Part number	Description
GeneChip[®] 3' IVT Express Kit	
901228	10 reactions
901229	30 reactions

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