



Data Sheet

GeneChip® *E. coli* Genome 2.0 Array

The GeneChip® *E. coli* Genome 2.0 Array contains probe sets to detect transcripts from the K12 strain of *E. coli* and three pathogenic strains of *E. coli*. Using the new *E. coli* Genome 2.0 Array, researchers can gain a comprehensive view of three pathogenic forms of *E. coli* while continuing ongoing research projects with the K12 strain.

The GeneChip® *E. coli* Genome 2.0 Array includes approximately 10,000 probe sets for all 20,366 genes present in four strains of *E. coli*. Due to the high degree of similarity between the *E. coli* strains, whenever possible, a single probe set is tiled to represent the equivalent ortholog in all four strains. The GeneChip *E. coli* Genome 2.0 Array tiles probe sets over the entire open reading frame (ORF) of *E. coli*, includes over 700 intergenic regions, probes for various antibiotic resistance markers, and incorporates additional control and reporter genes from the previous generation *E. coli* array.

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

E. coli is an important model organism for microbial research. The K12 strain has been the preferred organism for studying biochemical genetics, molecular biology, and biotechnology in prokaryotes. Additionally, pathogenic strains of *E. coli* contaminating meat and vegetable products have caused significant food poisoning outbreaks, leading to public concerns about food safety. The presence of four strains of the bacteria on the GeneChip® *E. coli* Genome 2.0 Array offers an unprecedented genomic view of *E. coli* and allows users to utilize the array for both

basic and public health research. The K12 (MG1655 lab strain), CFT073 (uropathogenic), O157:H7-EDL933 (enteropathogenic), and O157:H7-Sakai (enteropathogenic) are all included on the array.

The GeneChip *E. coli* Genome 2.0 Array enables thorough examination of gene expression patterns of *E. coli* under various conditions for a better understanding of biological pathways. Additionally, chromosomal regions between annotated ORFs may contain shorter expressed sequences that have not yet been identified. The GeneChip *E. coli* Genome 2.0 Array contains 1,427 probe sets complementary to such intergenic regions, making the

Critical Specifications

Number of probe sets, <i>E. coli</i> strain K12	5,298
Number of transcripts, <i>E. coli</i> strain K12	4,358
Number of probe sets, <i>E. coli</i> strain O157:H7-EDL933	5,480
Number of transcripts, <i>E. coli</i> strain O157:H7-EDL933	5,376
Number of probe sets, <i>E. coli</i> strain O157:H7-Sakai	5,380
Number of transcripts, <i>E. coli</i> strain O157:H7-Sakai	5,253
Number of probe sets, <i>E. coli</i> strain CFT073	7,421
Number of transcripts, <i>E. coli</i> strain CFT073	5,379
Number of probe sets, <i>E. coli</i> K12 Intergenic regions	1,427
Number of intergenic regions	714
Unique probe sets to a single strain:	
<i>E. coli</i> strain K12	657
<i>E. coli</i> strain O157:H7-EDL933	136
<i>E. coli</i> strain O157:H7-Sakai	218
<i>E. coli</i> strain CFT073	1,733
Number of arrays in set	One
Array format	169
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
<small>(Note: Components in the 20X hybridization controls are expressed endogenously in <i>E. coli</i>.)</small>	
Poly-A controls:	<i>dap</i> , <i>lys</i> , <i>phe</i> , <i>thr</i> , <i>trp</i> from <i>B. subtilis</i>
Detection sensitivity	1:100,000 ¹

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

search for novel transcripts more accessible. Finally, the detailed pattern of gene expression offered by the GeneChip *E. coli* Genome 2.0 Array can optimize culture conditions to improve yields of recombinant proteins in industrial microbiology.

Array Profile

Sequence information for the *E. coli* Genome Array was selected from the ASAP database (*E. coli* Genome Project; University of Wisconsin – Madison) and the NCBI public databases. The ASAP database provided the sequence and annotation information for the K12 strain (*m56* version) and the O157:H7-EDL933 strain (*vers1* version) in April 2004.

The NCBI databases provided the sequence information for the O157:H7-Sakai strain and CFT073 strain in May 2004.

Instrument Software Requirements

- GeneChip® Scanner 3000, enabled for High-Resolution Scanning*
- GeneChip® Operating Software (GCOS) v1.1.1 or later, 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® *E. coli* Genome 2.0 Array

GeneChip® *E. coli* Genome 2.0 Array

900550 Contains 2 arrays

900551 Contains 6 arrays

900552 Contains 30 arrays

Supporting Products

Part #	Product Name	Description
900542	GeneChip® DNA Labeling Reagent	Sufficient for 30 reactions
900301	Control Oligo B2, 3nM	Sufficient for 30 reactions
900433	GeneChip® Eukaryotic Poly-A RNA Control Kit	Approximately 100 reactions

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