



Data Sheet

GeneChip® Human Genome Arrays

The Most Comprehensive Coverage of All Well-Substantiated Genes in the Human Genome

The GeneChip® Human Genome Arrays provide the most comprehensive coverage of the human genome in multiple array formats to meet your specific research requirements. Whether you want to view the entire genome on a single array (GeneChip Human Genome U133 Plus 2.0 Array) or focus on a targeted set of biologically relevant data (GeneChip Human Genome Focus Array), the GeneChip Human Genome Arrays provide gene expression data for a multitude of applications, including:

- Uncovering new regulatory pathways
- Validating drug targets
- Clarifying diseases
- Analyzing toxicological responses
- Building robust databases

Power of the Probe Set — The key to the GeneChip advantage is that each high-density array provides multiple, independent measurements for each transcript. Multiple probes mean you get a complete data set with accurate, reliable, reproducible results from every experiment.

Exclusively from Affymetrix, this powerful family of arrays allows you to reliably and reproducibly examine the quantitative and qualitative expression of most genes in the human genome.

- GeneChip Human Genome U133 Plus 2.0 Array
- GeneChip Human Genome U133A 2.0 Array
- GeneChip Human Genome U133 Set (HG-U133A & HG-U133B)
- GeneChip Human Genome Focus Array

GeneChip® Human Genome U133 Plus 2.0 Array

The GeneChip® Human Genome U133 Plus 2.0 Array offers comprehensive analysis of genome-wide expression on a single array.

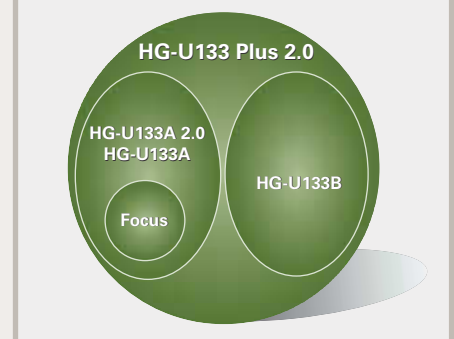
- Provides comprehensive coverage of the transcribed human genome on a single array
- Analyzes the expression level of over 47,000 transcripts and variants, including 38,500 well-characterized human genes
- Comprised of more than 54,000 probe sets and 1,300,000 distinct oligonucleotide features
- Use the Power of the Probe Set and get multiple independent measurements for each transcript that deliver the greatest accuracy and reproducibility of any microarray platform

ARRAY PROFILE

All probe sets represented on the GeneChip Human Genome U133 Set are identically replicated on the GeneChip Human Genome U133 Plus 2.0 Array. The sequences from which these probe sets were derived were selected from GenBank®, dbEST, and RefSeq. The sequence clusters were created from the UniGene database (Build 133, April 20, 2001) and then refined by analysis and comparison with a number of other publicly available databases, including the Washington University EST trace repository and the University of California, Santa Cruz Golden-Path human genome database (April 2001 release).

In addition, there are 9,921 new probe sets representing approximately 6,500 new genes. These gene sequences were selected

Figure 1. Relationship Among GeneChip® Human Genome Arrays



from GenBank, dbEST, and RefSeq. Sequence clusters were created from Build 159 of the UniGene database (January 25, 2003) and refined by analysis and comparison with a number of other publicly available databases, including the Washington University EST trace repository and the NCBI human genome assembly (Build 31).

Oligonucleotide probes complementary to each corresponding sequence are synthesized *in situ* on the array. Eleven pairs of oligonucleotide probes are used to measure the level of transcription of each sequence represented on the GeneChip Human Genome U133 Plus 2.0 Array (HG-U133 Plus 2.0).

INSTRUMENT/SOFTWARE REQUIREMENTS

- GeneChip® Scanner 3000, enabled for High-Resolution Scanning*
- GeneChip® Operating Software (GCOS) including the GeneChip Scanner 3000 High-Resolution Scanning Patch

*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.

GeneChip® Human Genome U133A 2.0 Array

The GeneChip® Human Genome U133A 2.0 Array is a single array representing 14,500 well-characterized human genes that can be used to explore human biology and disease processes. New design and reduced feature size mean you can use smaller sample volumes than the previous Human Genome U133A Array without compromising performance.

- Provides coverage of well-substantiated genes in the transcribed human genome on a single array
- Analyzes the expression level of 18,400 transcripts and variants, including 14,500 well-characterized human genes
- Comprised of more than 22,000 probe sets and 500,000 distinct oligonucleotide features

- Use the Power of the Probe Set and get multiple independent measurements for each transcript that deliver the greatest accuracy and reproducibility of any microarray platform
- All probe sets represented on the GeneChip Human Genome U133A Array are identically replicated on the GeneChip Human Genome U133A 2.0 Array

ARRAY PROFILE

Sequences used in the design of the array were selected from GenBank®, dbEST, and RefSeq. The sequence clusters were created from the UniGene database (Build 133, April 20, 2001) and then refined by analysis and comparison with a number of other publicly available databases, including the Washington University EST trace repository and the University of California, Santa Cruz Golden-Path human genome database (April 2001 release).

Oligonucleotide probes complementary to each corresponding sequence are synthesized *in situ* on the array. Eleven pairs of oligonucleotide probes are used to measure the level of transcription of each sequence represented on the GeneChip Human Genome U133A 2.0 Array (HG-U133A 2.0).

INSTRUMENT/SOFTWARE REQUIREMENTS

- GeneChip® Scanner 3000, enabled for High-Resolution Scanning*
- GeneChip® Operating Software (GCOS) including the GeneChip Scanner 3000 High-Resolution Scanning Patch

RELATIONSHIP TO THE GENECHIP HUMAN GENOME U133 PLUS 2.0 ARRAY

All probe sets represented on the GeneChip Human Genome U133A 2.0 Array are identically replicated on the GeneChip Human Genome U133 Plus 2.0 Array.

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GeneChip® Human Genome U133 Set

The GeneChip® Human Genome U133 Set provides comprehensive coverage, on two arrays, of well-substantiated genes in the human genome.

- Provides comprehensive coverage of the transcribed human genome on a two-array set
- Analyzes the expression level of 39,000 transcripts and variants, including greater than 33,000 well-substantiated human genes
- Comprised of more than 45,000 probe sets and 1,000,000 distinct oligonucleotide features

- Use the Power of the Probe Set and get multiple independent measurements for each transcript that deliver the greatest accuracy and reproducibility of any microarray platform

ARRAY PROFILE

Sequences used in the design of the array were selected from GenBank®, dbEST, and RefSeq. The sequence clusters were created from the UniGene database (Build 133, April 20, 2001) and then refined by analysis and comparison with a number of other publicly available databases, including the Washington University EST trace repository and the University of California, Santa Cruz Golden-Path human genome database (April 2001 release).

Oligonucleotide probes complementary to each corresponding sequence are synthesized *in situ* on the array. Eleven pairs of oligonucleotide probes are used to measure the level of transcription of each sequence represented on the GeneChip Human Genome U133 Set (HG-U133 Set).

RELATIONSHIP TO THE GENECHIP HUMAN GENOME U133 PLUS 2.0 ARRAY

All probe sets represented on the GeneChip Human Genome U133 Set are identically replicated on the GeneChip Human Genome U133 Plus 2.0 Array. In addition, there are 9,921 new probe sets representing approximately 6,500 new genes represented on the HG-U133 Plus 2.0 Array.

GeneChip® Human Genome Focus Array

The GeneChip® Human Genome Focus Array provides a targeted set of biologically relevant data on a single array.

- Provides a cost-effective solution for investigating RefSeq-curated genes from the human genome
- Represents gene sequences that are experimentally verified, many with hand-curated annotations
- Contains probe sets and normalization genes derived directly from the Human Genome U133 Set, so you can build “data equity”
- Use the Power of the Probe Set and get multiple independent measurements for each transcript that deliver the greatest accuracy and reproducibility of any microarray platform

ARRAY PROFILE

Sequences used in the design of the array were selected from GenBank®, dbEST, and RefSeq. The sequence clusters were created from the UniGene database (Build 133, April 20, 2001) and then refined by analysis and comparison with a number of other publicly available databases, including the Washington University EST trace repository and the University of California, Santa Cruz Golden-Path human genome database (April 2001 release).

Oligonucleotide probes complementary to each corresponding sequence are synthesized *in situ* on the array. Eleven pairs of oligonucleotide probes are used to measure the level of transcription of each sequence represented on the GeneChip Human Genome Focus Array.

RELATIONSHIP TO THE GENECHIP HUMAN GENOME ARRAYS:

- GeneChip® Human Genome U133 Plus 2.0 Array
 - All probe sets represented on the GeneChip Human Focus Array are identically replicated on the GeneChip Human Genome U133 Plus 2.0 Array.
- GeneChip® Human Genome U133A 2.0 Array
 - All probe sets represented on the GeneChip Human Focus Array are identically replicated on the GeneChip Human Genome U133A 2.0 Array.
- GeneChip® Human Genome U133 Set
 - All probe sets represented on the GeneChip Human Focus Array are identically replicated on the GeneChip Human Genome U133A Array.

Normalization Controls

All GeneChip Human Genome Arrays include a set of human maintenance genes

to facilitate the normalization and scaling of array experiments. These probe sets are identical on all Human Genome Arrays. This set of genes serves as a tool to normal-

ize and scale your data prior to performing data comparisons. This set of normalization genes shows consistent levels of expression over a diverse set of tissues.

Critical Specifications for GeneChip® Human Genome Arrays

	Human Genome U133 Plus 2.0 Array	Human Genome U133A 2.0 Array	Human Genome U133 Set	Human Genome Focus Array
Number of arrays in set	1	1	2	1
Number of transcripts	~47,400	18,400	~39,000	~8,500
Number of genes	38,500	14,500	~33,000	~8,400
Number of probe sets	>54,000	>22,000	>45,000	>8,700
Feature size	11 µm	11 µm	18 µm	18 µm
Oligonucleotide probe length	25-mer	25-mer	25-mer	25-mer
Probe pairs/sequence	11	11	11	11
Control sequences included:				
Hybridization controls	<i>bioB, bioC, bioD, cre</i>	<i>bioB, bioC, bioD, cre</i>	<i>bioB, bioC, bioD, cre</i>	<i>bioB, bioC, bioD, cre</i>
Poly-A controls	<i>dap, lys, phe, thr</i>	<i>dap, lys, phe, thr</i>	<i>dap, lys, phe, thr</i>	<i>dap, lys, phe, thr</i>
Normalization control set	100 probe sets	100 probe sets	100 probe sets	100 probe sets
Housekeeping/Control genes	GAPDH, beta-Actin, ISGF-3 (STAT1)	GAPDH, beta-Actin, ISGF-3 (STAT1)	GAPDH, beta-Actin, ISGF-3 (STAT1)	GAPDH, beta-Actin, ISGF-3 (STAT1)
Detection sensitivity	1:100,000*	1:100,000*	1:100,000*	1:100,000*

*As measured by detection of pre-labeled transcripts derived from human cDNA clones in a complex human background.

Supporting Products for GeneChip Human Genome Arrays

Part Number	Product Name	Description
900182	Enzo® BioArray™ HighYield™ RNA Transcript Labeling Kit	Sufficient for 10 reactions
900299	Eukaryotic Hybridization Control Kit	Sufficient for 30 reactions
900362	Eukaryotic Hybridization Control Kit	Sufficient for 150 reactions
900371	Sample Cleanup Module	Sufficient for 30 reactions
900375	T7-Oligo(dT) Promoter Primer Kit	Sufficient for 150 reactions
900433	Eukaryotic Poly-A RNA Control Kit	Sufficient for approximately 100 reactions

Arrays Instrument / Software Compatibility

HG-U133 Plus 2.0	GeneChip® Scanner 3000, enabled for High-Resolution Scanning,* and GeneChip Operating Software (GCOS) with the GeneChip Scanner 3000 High-Resolution Scanning Patch
HG-U133A 2.0	GeneChip® Scanner 3000, enabled for High-Resolution Scanning,* and GeneChip Operating Software (GCOS) with the GeneChip Scanner 3000 High-Resolution Scanning Patch
HG-U133A	GeneArray® 2500 Scanner or newer and Affymetrix® Microarray Suite version 5.0 or newer
HG-U133B	GeneArray® 2500 Scanner or newer and Affymetrix® Microarray Suite version 5.0 or newer
Focus	GeneArray® 2500 Scanner or newer and Affymetrix® Microarray Suite version 5.0 or newer

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RELATED PUBLICATIONS

Cousins, R. J. *et al.* A global view of the selectivity of zinc deprivation and excess on genes expressed in human THP-1 mononuclear cells. *Proceedings of the National Academy of Sciences of the United States of America* **100**(12), 6952-7 (2003).

Williams, K. L. *et al.* Cutting edge: monarch-1: a pyrin/nucleotide-binding domain/leucine-rich repeat protein that controls classical and nonclassical MHC class I genes. *Journal of Immunology* **170**(11), 5354-8 (2003).

Soon, L. L. *et al.* Overexpression of WISP-1 downregulated motility and invasion of lung cancer cells through inhibition of Rac activation. *Journal of Biological Chemistry* **278**(13), 11465-70 (2003).

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Ordering Information

GeneChip® Human Genome Arrays

Human Genome U133 Plus 2.0 Array

900470 Contains 2 HG-U133 Plus 2.0 Arrays

900466 Contains 6 HG-U133 Plus 2.0 Arrays

900467 Contains 30 HG-U133 Plus 2.0 Arrays

Human Genome U133A 2.0 Array

900471 Contains 2 HG-U133A 2.0 Arrays

900468 Contains 6 HG-U133A 2.0 Arrays

900469 Contains 30 HG-U133A 2.0 Arrays

Human Genome U133 Set

900444 Contains 30 HG-U133A and
30 HG-U133B Arrays

900370 Contains 5 HG-U133A and
5 HG-U133B Arrays

900366 Contains 5 HG-U133A Arrays

900367 Contains 30 HG-U133A Arrays

900368 Contains 5 HG-U133B Arrays

900369 Contains 30 HG-U133B Arrays

Human Genome Focus Array

900376 Contains 30 HG-Focus Arrays

900377 Contains 5 HG-Focus Arrays

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Not for use in diagnostic procedures.**

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