

## GeneChip® miRNA 4.0 Array

## Affymetrix® miRNA 4.1 Array Strip

## Affymetrix® miRNA 4.1 Array Plates

**Comprehensive tool for understanding the regulation of coding and non-coding transcripts**

**Affymetrix' miRNA 4.0 and 4.1 Arrays help bring you closer to biology with:**

**Comprehensive coverage** – Designed to interrogate all mature miRNA sequences in miRBase Release 20

**Streamlined analysis** – Analyze human, mouse, rat, or every miRNA for all species using the same array

**Rich information** – Array results are complimented with host gene ID, miRNA target genes, and clustered miRNA

**Low sample input** – Requires as little as 130 ng total RNA

### **Introduction**

Many diseases, including cancer, are frequently described as diseases of disordered gene expression. It is estimated that more than 30% of protein translation of coding genes are regulated by miRNA. There is also a large amount of growing evidence suggesting miRNA interacts with long non-coding RNA in the signaling networks that regulate alternative splicing events, which impacts cellular processes such as apoptosis, proliferation, and differentiation—all of which have shown to be causative elements in diseases such as cancer.

Measuring the changes in these critical nodes of regulation is extremely important for deciphering the biological context of differentially expressed genes. This new array design is a powerful tool for studying the role of small non-coding RNAs and their involvement in a broad spectrum of developmental and physiological mechanisms such as:

- Protein translation inhibition
- Alternative splicing regulation
- Ribosomal RNA processing
- mRNA degradation

### **Comprehensive and unique array content**

Affymetrix' high-density array provides the most sensitive, accurate, and complete measurement of small non-coding RNA transcripts involved in gene regulation. These Affymetrix miRNA Arrays are the only arrays that provide:

- 100% miRBase v20 coverage
- 30,424 mature miRNA (all organisms)
- 5,214 human, mouse, and rat miRNA
- 1,996 human snoRNA, scaRNA
- 3,770 probe sets unique to human, mouse, and rat pre-miRNA hairpin sequences

### **Superior performance**

GeneChip® miRNA 4.0 Array demonstrates superior performance:

- 0.95 reproducibility (inter- and intra-lot)
- >80% of transcripts detected at 1.3 amol from 130 ng of total RNA
- 4 logs of dynamic range
- >0.97 signal correlation
- >0.94 fold-change correlation

### **The easiest and most affordable solution**

Coupled with the simple and affordable Affymetrix® FlashTag™ Biotin HSR RNA Labeling Kit, Affymetrix® miRNA Arrays offer easy target preparation (even from challenging samples such as FFPE) and are the most affordable solution available.

The 45-minute assay—from RNA sample to labeled target—does not involve complex enzymology (amplification) or purification steps that can reduce the yield or bias your results by introducing false positives or false negatives.

## Simple data analysis

Data analysis of Affymetrix' miRNA Arrays is simple. The CEL files generated by these arrays are compatible with Affymetrix® Expression Console™ Software (version 1.3.1 and higher) to enable simple data analysis. Affymetrix' miRNA Arrays are designed to contain all miRNA in miRBase Release 20; however, we have provided the ability to filter your data using 1 of 4 analysis options. Prior to performing the analysis in Expression Console Software, the following 4 options are presented:

- All organisms
- Mouse only
- Human only
- Rat only

By selecting either the human, mouse, or rat only analysis options, only the probe sets for the selected organism(s) will be reported in the analysis output. After generating the signal summarization, you can perform differential expression analysis and visualize your results using Affymetrix® Transcriptome Analysis Console (TAC) Software. Both Expression Console Software and TAC Software can be downloaded for free from [www.affymetrix.com](http://www.affymetrix.com).

## Ordering information

Part number	Description	Details
902411	GeneChip® miRNA 4.0 Array	Contains 2 arrays
902412	GeneChip® miRNA 4.0 Array	Contains 6 arrays
902413	GeneChip® miRNA 4.0 Array	Contains 30 arrays
902445	GeneChip® miRNA 4.0 Array and Flashtag™ Bundle	Sufficient for 10 samples
902446	GeneChip® miRNA 4.0 Array and Flashtag™ Bundle	Sufficient for 30 samples
902404	Affymetrix® miRNA 4.1 Array Strip	Contains one 4-array strip
902408	Affymetrix® miRNA 4.1 Array Plate	Contains one 16-array plate
902409	Affymetrix® miRNA 4.1 Array Plate	Contains one 24-array plate
902410	Affymetrix® miRNA 4.1 Array Plate	Contains one 96-array plate

Part number	Description	Details
901910	Affymetrix® FlashTag™ Biotin HSR RNA Labeling Kit	Sufficient for 10 reactions
901911		Sufficient for 30 reactions
900720	GeneChip® Hybridization, Wash, and Stain Kit	Sufficient for 30 reactions
902276	GeneTitan® Hybridization, Wash, and Stain Kit for miRNA Array Plates	Sufficient for 96 reactions
902275	Gene Titan® Hybridization Module for miRNA Array Plates	Sufficient for 96 reactions
902134	GeneAtlas® Hybridization, Wash, and Stain Kit for miRNA Array Strips	Sufficient for 60 reactions
900454	GeneChip® Hybridization Control Kit	Sufficient for 30 reactions
900301	Control Oligo B2, 3nM <sup>1</sup>	Sufficient for 30 reactions

<sup>1</sup>Included in the Hybridization Control Kit

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Array content description	
miRBase	Release 20
Ensembl (BioMart Export)	Release 73
snoRNAbase	Version 3
mirTarbase	Release 4.5
MicroCosm Targets	11/2013
Organisms (including viruses)	203
Total mature miRNA probe sets	30,434
Probes/probe set for mature miRNA	9
Human mature miRNA probe sets	2,578
Mouse mature miRNA probe sets	1,908
Rat mature miRNA probe sets	728
Human snoRNA and scaRNA probe sets	1,996
Human pre-miRNA probe sets	2,025
Mouse pre-miRNA probe sets	1,255
Rat pre-miRNA probe sets	490

## Specifications

Performance	
Reproducibility (inter- and intra-lot)	>0.95
Transcripts detected at 1.3 amol in 130 ng	85%
Dynamic range	4 logs
Total RNA input	130–1,000 ng
Probe feature size	11 μm
Probe length	Up to 25-mer