DataSheet

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Biology for a better world

GeneChip® 3′ IVT Pico Kit (3′ IVT Pico Kit)

A flexible and complete sample preparation kit for the expression analysis of limited quantities of input RNA from any sample type on 3′ IVT arrays from Affymetrix

GeneChip® 3′ IVT Pico Kit (3′ IVT Pico Kit) is the most flexible and sensitive target preparation method for accurate and precise analysis of genome-wide expression on 3′ IVT arrays from as few as **10 cells**.*

Complete flexibility for small quantities of RNA

- Reveal the biology in small subpopulations of cells using as little as 100 pg of total RNA (approximately 10 cells).*
- Benefit from total flexibility with a single kit for key sample types:
  - Cultured cells
  - Fresh/fresh frozen and formalin-fixed paraffin-embedded (FFPE) tissues
  - Whole blood
- Eliminate the need for globin mRNA or ribosomal RNA reduction to decrease variability and simplify experimental workflows.
- Power clinical research studies by leveraging the unprecedented number of data sets generated using the GeneChip® Human Genome U133 array design, including nearly 14,000 publications.
- Preserve precious clinical sample material for future experiments.

Uncover biology hidden in heterogeneous samples

Traditional genome-wide expression analysis requires RNA extracted from samples composed of a relatively large number of cells. However, the gene expression measurements derived from these samples represent averages that can potentially mask key differences between subpopulations of cells within the samples. To better understand the biological significance of these differences in gene expression, researchers are increasingly focused on characterizing and analyzing subpopulations of cells.

Modern technologies, including fluorescence-activated cell sorting (FACS) and laser-capture microdissection (LCM), enable the characterization and subsequent isolation of small populations of cells. However, due to the limited number of cells, these samples typically produce insufficient RNA to obtain robust expression data from microarrays or RNA sequencing. 3′ IVT Pico Kit, developed specifically to process limited amounts of input RNA, enables researchers to perform robust gene-level analysis on 3′ IVT arrays from Affymetrix, including GeneChip® Human Genome U133 Plus 2.0 Arrays, using just a few cells from a variety of sample types.

A single kit for multiple sample types

Studies often require the analysis of samples derived from multiple types of tissues. Cancer research, for example, commonly involves the comparison of samples derived from fresh frozen tissues and from FFPE tissues. Usually, it is necessary to use different kits to process different sample types, which increases the complexity of the experimental workflow and introduces unwanted variation into the data. 3′ IVT Pico Kit, which can be used to process the majority of sample types used in basic and translational research, streamlines the experimental workflow, and eliminates variability due to different target preparation methods.

Maximize the value of precious samples

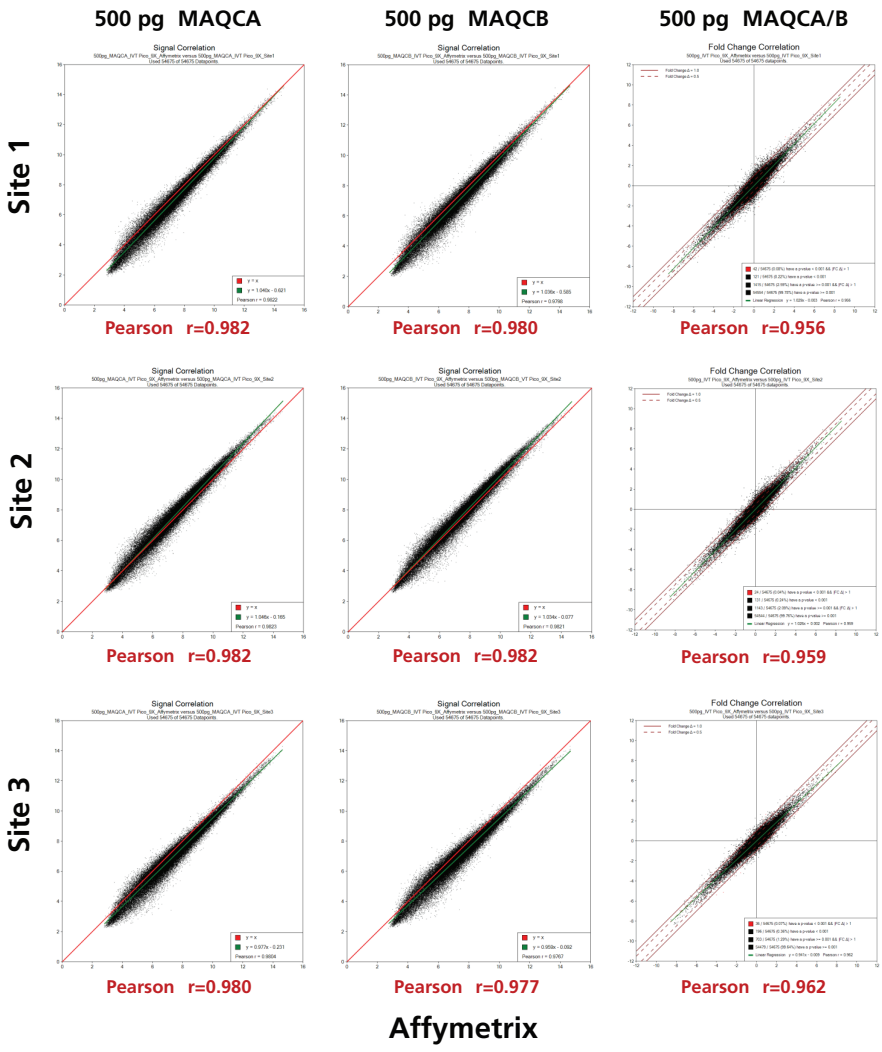
Many samples, such as those derived from biopsies, are highly precious because they are unique or otherwise irreplaceable. When working with these precious samples, researchers must focus on preserving the maximum amount of each sample for future experiments. Working with 3′ IVT Pico Kit, researchers can use as few as 10 cells to generate robust and reproducible whole-transcriptome data from microarrays, which ensures that the majority of the sample is preserved for future use.

*The recommended amount of input RNA is 500 pg and the minimum amount is 100 pg. Use of less than 500 pg of input RNA may result in a slight loss of assay sensitivity. Review the *GeneChip® 3′ IVT Pico Reagent Kit Manual Target Preparation for GeneChip® 3′ Expression Arrays* User Guide (P/N 703308) for more detailed information.

Specifications

Performance specifications	
cRNA yield	≥25 µg
cDNA yield	≥7 µg
Technical replicate signal correlation Pearson r	≥0.80
% median coefficient of variation (CV)	≤15%
Actin 3′/5′ ratio	≤5.0
GAPDH 3′/5′ ratio	≤2.0
Poly-A 3′ detection	Present
Sample type	Total RNA from tissue, cell line, whole blood, and FFPE samples
Recommended sample input range	500 pg–10 ng (2 ng–50 ng for FFPE)
Minimum sample input	100 pg (500 pg for FFPE)
Complete sample input range	100 pg–10 ng (500 pg–50 ng for FFPE)

The following signal correlation and fold-change correlation plots with excellent Pearson r values between Affymetrix internal laboratory and three external research centers demonstrates performance consistency. At each site, replicates of hybridization-ready targets were prepared from 500 pg input MAQCA and MAQCB total RNA using 3′ IVT Pico Kit and were hybridized to GeneChip® Human Genome U133 Plus 2.0 Array.



The following CV table demonstrates 3' IVT Pico Kit's consistent assay performance when run at external sites. Hybridization targets were prepared in triplicate from 500 pg MAQCA and MAQCB total RNA by four sites (Affymetrix, Site 1, Site 2, and Site 3). Technical replicates were hybridized on GeneChip® Human Genome U133 Plus 2.0 Array. Median CV was calculated using all probe sets.

Site	RNA sample	Gene-level median coefficient of variation
Affymetrix	MAQCA	4.95%
Affymetrix	MAQCB	5.15%
Site 1	MAQCA	9.18%
Site 1	MAQCB	13.28%
Site 2	MAQCA	8.39%
Site 2	MAQCB	9.47%
Site 3	MAQCA	7.33%
Site 3	MAQCB	8.14%

Specification	**15%**

Ordering information

Part number	Description	Details
902789	GeneChip® 3' IVT Pico Kit	12 reactions
902790	GeneChip® 3' IVT Pico Kit	30 reactions

Related products

Part number	Description	Details
900720	GeneChip® Hybridization, Wash, and Stain Kit	Sufficient for 30 reactions
901530	GeneTitan® Hybridization, Wash, and Stain Kit for 3' IVT Arrays	Sufficient for 96 reactions
901531	GeneAtlas® Hybridization, Wash, and Stain Kit for 3' IVT Arrays	Sufficient for 60 reactions

Recommended assays

Part number	Description	Details
902857	GeneChip® Human Genome U133 Plus 2.0 Pico Assay	12 reactions
902858	GeneChip® Human Genome U133 Plus 2.0 Pico Assay	30 reactions
902859	GeneChip® PrimeView® Human Gene Expression Pico Assay	12 reactions
902860	GeneChip® PrimeView® Human Gene Expression Pico Assay	30 reactions
902861	GeneChip® Mouse Genome 430 2.0 Pico Assay	12 reactions
902862	GeneChip® Mouse Genome 430 2.0 Pico Assay	30 reactions
902863	GeneChip® Rat Genome 230 2.0 Pico Assay	12 reactions
902864	GeneChip® Rat Genome 230 2.0 Pico Assay	30 reactions

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P/N EMI06145 Rev. 1