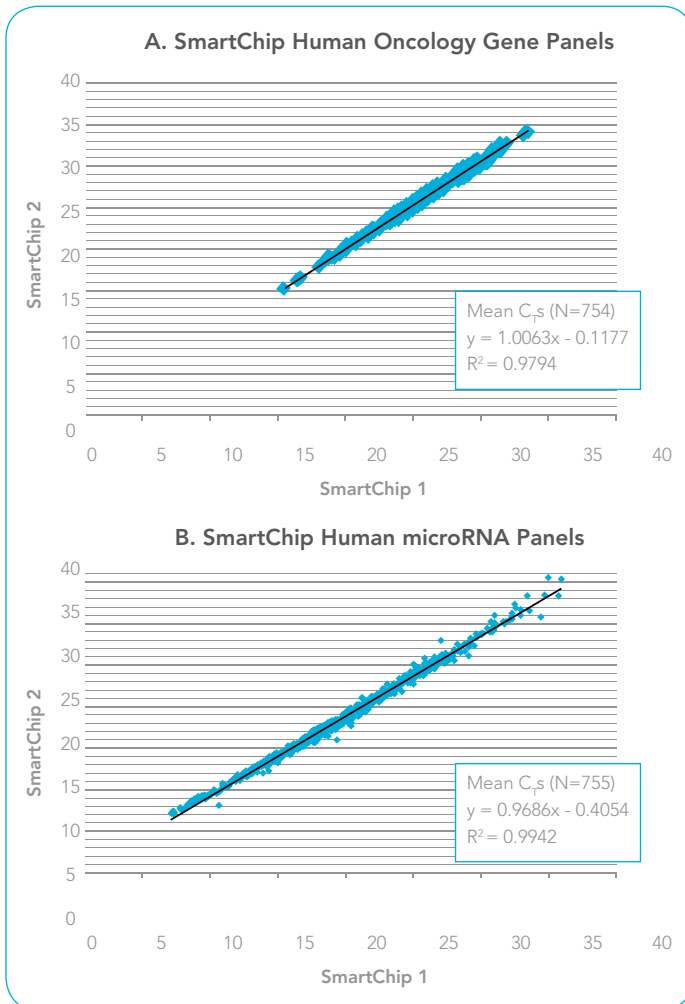


SmartChip Human Gene Panels Product Note



High Throughput Real-Time PCR

The SmartChip System consists of a family of instruments and gene panels that enable high density real-time PCR gene expression analysis for both high-throughput discovery and validation experiments. In just over 2 hrs, the SmartChip Cyclor can process a SmartChip panel, enabling gene expression profiling of 5,184 reaction wells on a single sample using the SmartChip Nanodispenser. In addition, the system is capable of profiling tens to hundreds of genes on multiple samples using the SmartChip Multisample Nanodispenser. SmartChip panels are pre-optimized for profiling oncology or microRNA targets or customized for your research needs.

SmartChip Human Oncology and MicroRNA Panels

SmartChip panels are loaded with pre-optimized PCR primers that have been validated in both microliter- and nanoliter-scale SYBR® Green real-time PCR experiments. Primer pairs are selected using strict bioinformatics criteria, including primer specificity, exclusion of sequence polymorphisms, short amplicon size, and minimization of primer artifacts or primer-dimers. The results from both the SmartChip Human Oncology Gene Panel and

Figure 1. SmartChip Panel results are highly reproducible. These graphs illustrate the high correlation between replicate SmartChip panels using (A) 0.5 µg of total RNA from a frozen lung tumor on SmartChip Human Oncology Gene Panels and (B) a panel of commercially available synthetic miRNA template on SmartChip Human MicroRNA Panels. Each data point represents the mean of 4 replicates. N is the number of targets on each graph.

PRE-OPTIMIZED AND CUSTOM-BUILT SMARTCHIP GENE PANELS

Human Oncology Panel V2

- 1239 genes in quadruplicate
- Sequences span 16 functional groups
- 21 endogenous controls
- 6 exogenous controls

Human MicroRNA Panel V2

- 1200 validated miRNAs in quadruplicate
- miRBase 16.0 database referenced sequences
- 11 endogenous controls
- 6 exogenous controls

Pathway Analysis Panels

- Over 9000 validated assays
- Covers some 475 biological pathways from the KEGG, BioCarta and Reactome databases
- Customize for your research needs

Additional information about the SmartChip Nanodispensers and Cyclor can be found in Product Note MKT-0006.

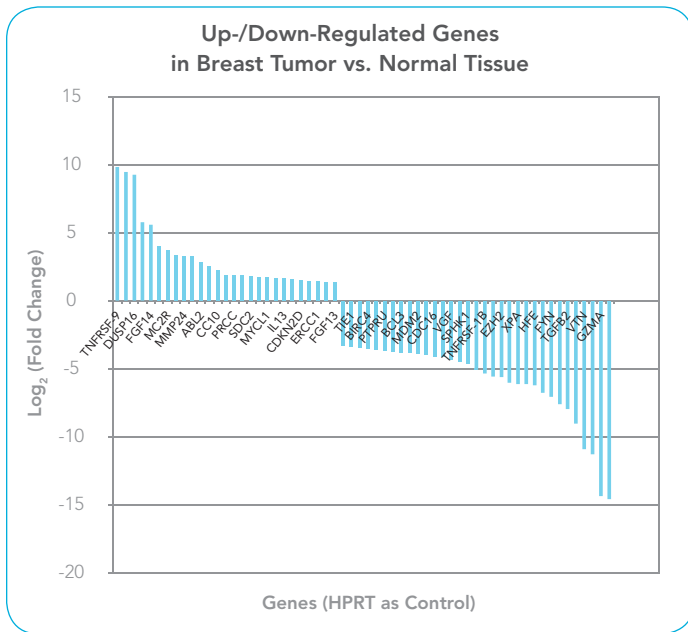


Figure 2. Characterize differential gene expression of >950 oncology genes in approximately 2 hours. The SmartChip Human Oncology Gene Panel was used to measure differential gene expression from 0.5 µg of RNA from breast cancer vs. normal tissue. Data were normalized to results from the HPRT control gene, and only significant up and down regulated genes are displayed.

the SmartChip Human MicroRNA Panel are highly reproducible (Figure 1). The SmartChip System now makes it possible to profile large gene sets using a highly quantitative method (Figure 2) for biomarker profiling or validation studies.

Pathway Analysis Panels

Pathway Analysis SmartChip Panels enables the profiling of many samples on pre-validated sets of genes in a simple workflow. Choose from over 9000 assays grouped into some 475 biological and functional pathways from the KEGG, BioCarta and Reactome databases. Simply order the assays needed and WaferGen sends pre-printed chips in the configuration required. Alternatively, contact us and a WaferGen Scientist can design, optimize and deliver SmartChip Custom Panels with 10’s to 100’s of assays repeated across the chip, saving time and money on your quantitative PCR validation studies.

SmartChip Panel Performance Specifications	
Sensitivity	>10 copies of RNA from cell lines, frozen tissue, or FFPE tissue
Specificity	Discrimination of genes with <90% homology
Precision	Standard deviation <0.2 C _T at 650 copies / well of positive control DNA
Reproducibility	R ² value between chips of >0.95 or <12% CV
SmartChip Panel Specifications	
Chip Size	(W) 41 mm, (H) 41 mm, (D) 2.7 mm
Number of Wells	5,184
Well Matrix	72 x 72
Well Volume	Supports 100-nanoliter reactions
Thermal	Chip provides intimate contact with thermal cycler for reliable thermal performance
Contamination	Chip top is surface adhesive and pressure sealed to prevent amplicon contamination

7400 Paseo Padre Parkway Fremont, CA 94555 U.S.A. info@wafergen.com +1 510.651.4450 www.WaferGen.com



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