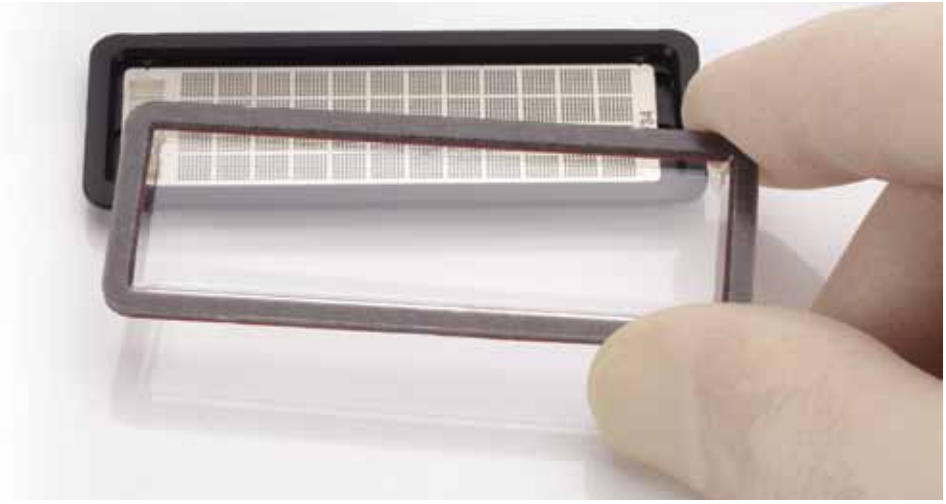
TaqMan® OpenArray® Human Cancer Panel

Expression analysis of bench-validated human genes involved in cancer

OpenArray® technology is a nanofluidics platform for low-volume, solution-phase reactions that streamlines real-time PCR studies using large numbers of samples and assays. A single TaqMan® Human Cancer Panel plate holds over 2,600 real-time PCR assays. TaqMan® OpenArray® Panels contain a defined selection of human gene families that are involved in commonly studied disease states and cellular and physiologic pathways. Use of these panels simplifies the identification of genes that are differentially expressed as a result of a particular disease state or drug treatment.

The TaqMan® OpenArray® Human Cancer Panel is available for use on both the QuantStudio™ 12K Flex Real-Time PCR System and the OpenArray® Real-Time PCR System. Users can be confident of high-quality results on any OpenArray® platform.



Identifies genes in key pathways of cancer

The TaqMan® OpenArray® Human Cancer Panel was developed to identify differentially expressed genes involved in key pathways of cancer. Many biological pathways affect the progression of cancer, and distinct biological pathways are inhibited or activated during the stages of tumorigenesis or by different types of cancer. This cancer panel is designed to determine the expression profile of genes in these biological pathways, which can be used for target or biomarker discovery and validation.

Fully optimized collection of assays

The TaqMan® OpenArray® Human Cancer Panel consists of 648 targets specific to cancer-related genes and internal references (Table 1). The cancer panel covers genes related to DNA repair, angiogenesis, cell adhesion, and extracellular matrix. It also includes genes involved in the cell cycle and apoptosis, and many of the genes encoding kinases and transcription factors that have been found to be differentially expressed in early cancer and

metastatic disease. In addition, there are 24 endogenous control genes in quadruplicate, against which the assays can be normalized. All assays in this panel have been bench-validated in our laboratories, so you can be sure that each assay is fully optimized. The complete assay list is available on our website at lifetechnologies.com/openarray.

Table 1. Functional grouping of genes in the TaqMan® OpenArray® Human Cancer Panel.

Human cancer group	Gene count*
Number of reference genes	24
Genes involved in cancer	121
Cell cycle regulators	105
Growth, proliferation, and differentiation	180
Regulators of cell adhesion and motility	79
Cell signaling in cancer development	289
Other cancer development genes	194
Total gene count*	648

(including reference)

*Some genes fall into multiple groups, so the sum of the genes in each group does not equal the total gene count.

The targets selected for the TaqMan® OpenArray® Human Cancer Panel were specifically designed to have similar properties, such as annealing temperature and GC content. To validate the assays, both the OpenArray® Real-Time PCR System and 7900HT Fast Real-Time PCR System were used. The assays were validated based on efficiency, specificity, and precision.

Figures 1–4 depict the breadth of data that can be generated using the OpenArray® Real-Time PCR System [Figures 1 and 2] and the QuantStudio™ 12K Flex system [Figures 3 and 4]. Figure 5 provides a comparison of data across both instruments.

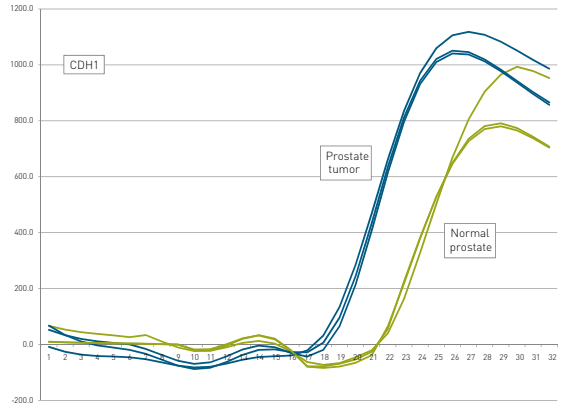


Figure 1. Typical amplification curves for one assay from the TaqMan® OpenArray® Human Cancer Panel run on the OpenArray® Real-Time PCR System.

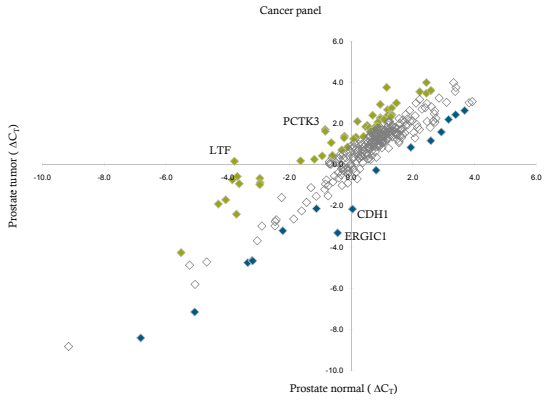


Figure 2. Relative expression of genes in two different tissue samples run on the OpenArray® Real-Time System.

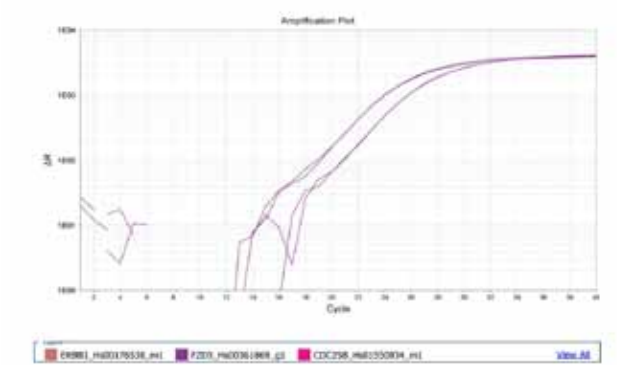


Figure 3. Typical amplification curves for one assay from the TaqMan® OpenArray® Human Cancer Panel (QuantStudio™ 12K Flex system).

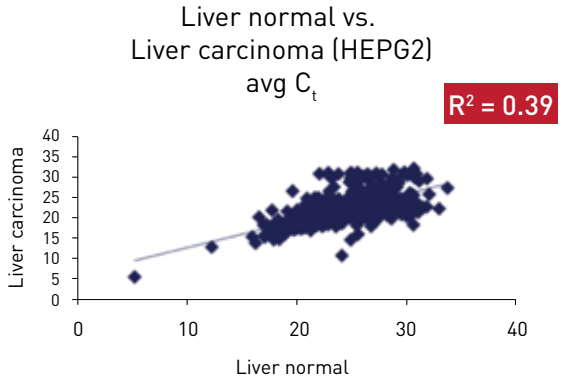


Figure 4. Relative expression of genes in liver carcinoma (HEPG2 cells) vs. liver normal tissue samples (expressed as avg C_t) run on the QuantStudio™ 12K Flex system.

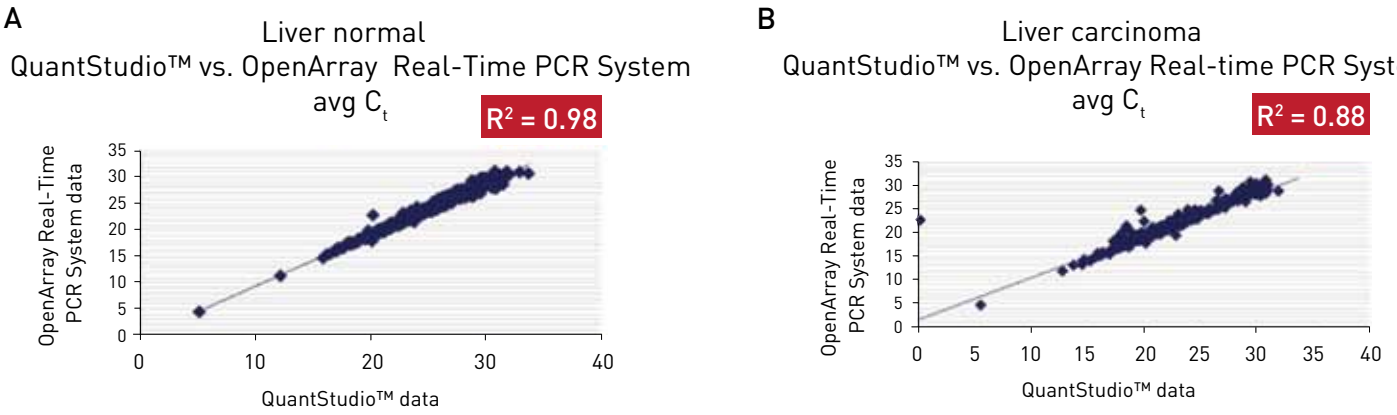


Figure 5. Comparison of QuantStudio™ 12K Flex system vs. OpenArray® Real-Time PCR System. qPCR analysis (avg C_t) of normal liver tissue **(A)** and liver carcinoma tissue (**B**).

Generates over 10,000 data points per run

The configuration for the TaqMan® OpenArray® Human Cancer Panel plate is shown in Figure 6. The four colors represent four different samples that can be loaded onto the plate. Alternatively, four replicate samples can be loaded onto the plate. The QuantStudio™ 12K Flex system can run four plates at once, generating over 10,000 data points.

The TaqMan® OpenArray® Human Cancer Panel is available for both the QuantStudio™ 12K Flex Real-Time PCR Instrument and the OpenArray® Real-Time PCR System. Users can be confident of high-quality results on any OpenArray® platform.

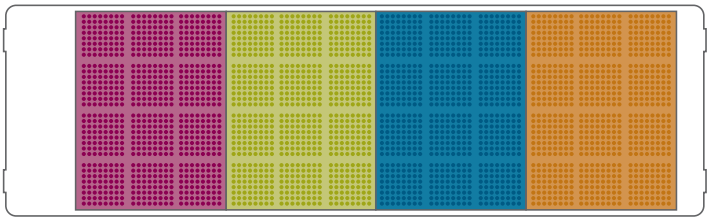


Figure 6. TaqMan® OpenArray® Human Cancer Panel plate. Each through-hole contains a primer pair specific for a cancer gene or a control. Each assay is repeated four times on the TaqMan® OpenArray® plate. Run a single sample to generate four data points per assay, or run four different samples on the plate, as depicted here by the color groupings.

Ordering information

Product	Contents	Cat. No.
TaqMan® OpenArray® Human Cancer Panel	1 plate	4475371
TaqMan® OpenArray® Human Cancer Panel, QuantStudio™ 12K Flex	1 plate	4475391
Related products required for use with panels		
TaqMan® OpenArray® Real-Time PCR Accessories Kit (for use with the OpenArray® Real-Time PCR System)	Enough for 10 plates	4453993
QuantStudio™ 12K Flex OpenArray® Accessories Kit	Enough for 10 plates	4469576

Contact your local Life Technologies support representative for more information on the TaqMan® OpenArray® Human Cancer Panel as well as sample preparation details.

Learn more at **lifetechnologies.com**

life technologies™