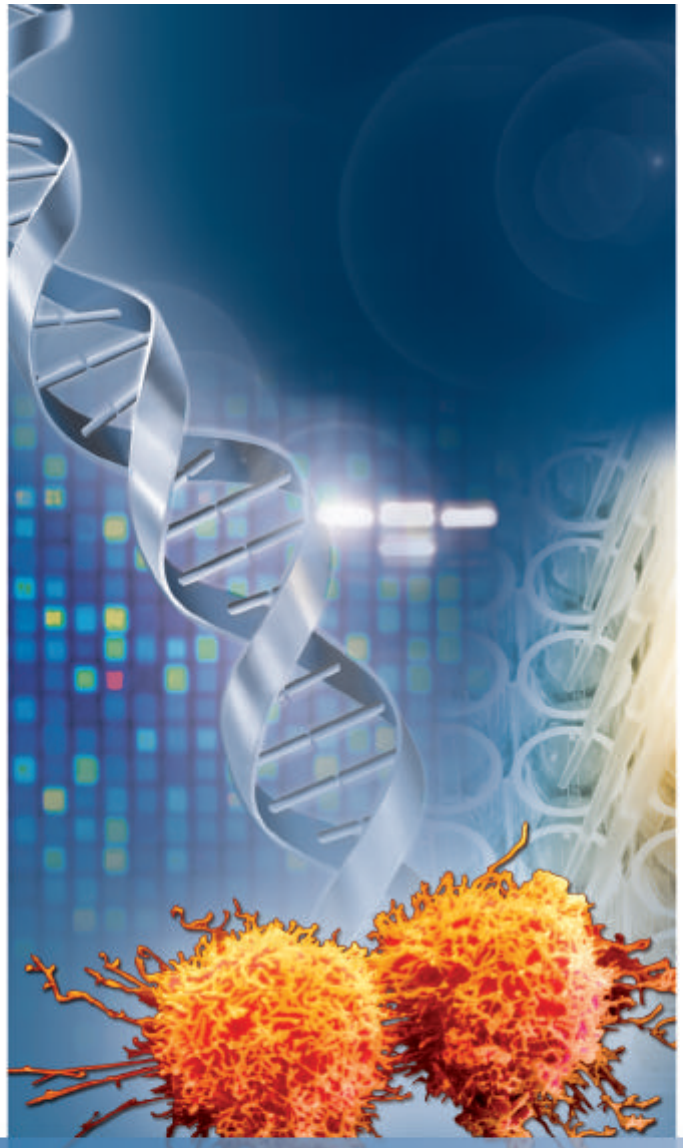
# Cancer Research

## *Gene Expression Analysis You Can Count On*

Gain unprecedented insight into the biology of cancer development and progression. Roche Applied Science's tools for gene expression analysis allow fast and accurate measurement of gene regulation and expression levels.



- **Quantify target gene set expression levels with easily customized pathway-specific oncology RealTime ready panels** that are pre-plated for the LightCycler® 480 qPCR System (see Figure 1).
- **Efficiently isolate high yield RNA from diverse sample types using any possible throughput.** Minimize RNA loss and generate powerful signals in downstream applications using column-based High Pure Isolation Kits, the medium-throughput MagNA Pure LC 2.0 System, and the new MagNA Pure 96 System.
- **Generate high-quality full-length cDNA through unbiased reverse transcription.** Prepare cDNA without distorting gene expression levels using the sensitive Transcriptor First Strand cDNA Synthesis Kit.
- **Perform true high-throughput real-time qPCR.** Increase throughput fourfold using the new LightCycler® 1536 System generating 1,536 results in a single run in less than 50 minutes.
- **Acquire the right gene expression data at the right time point.** Combine the xCELLigence System for real-time cell monitoring and RealTime ready panels for gene expression profiling to accurately define time points for gene analysis (see Figure 2).
- **Harness the power of real-time PCR with FastStart Universal qPCR master mixes.** Maximize convenience in other real-time PCR instruments.

Visit **www.gene-expression.roche.com** for articles, technical tips, and additional information on gene expression.
Visit **www.cancer-research.roche.com** for application notes and Roche Applied Science's complete product lines, helping you identify the cellular and molecular mechanisms of cancer.

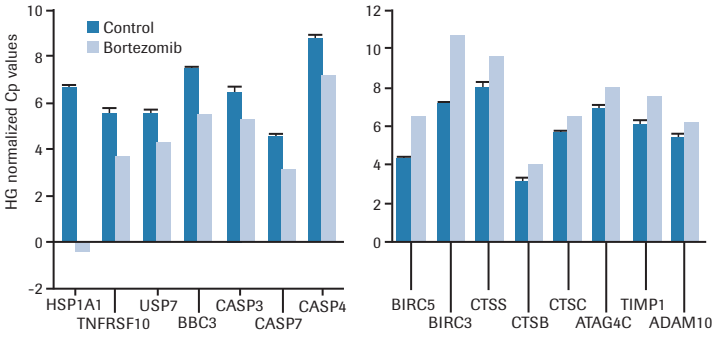
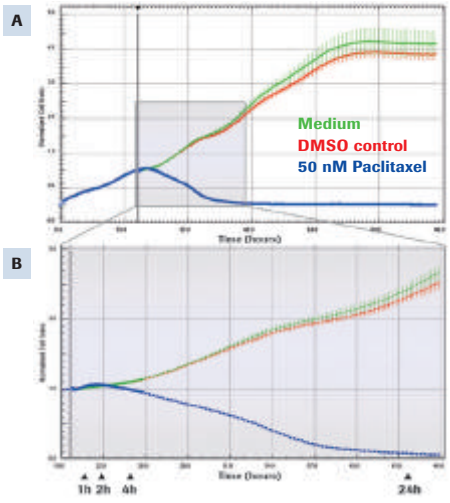
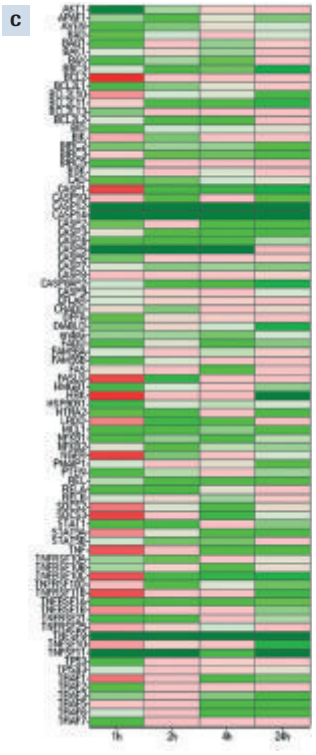



**Figure 1: Altered protease gene expression in SH-SY5Y neuroblastoma cells after bortezomib treatment.** RNA was isolated using the High Pure RNA Isolation Kit. cDNA was transcribed using the Transcriptor First Strand cDNA Synthesis Kit. qRT-PCR was performed on the LightCycler® 480 Instrument using the LightCycler® 480 Probes Master and RealTime ready Protease Custom Panel. Differences between the Cp values of bortezomib-treated samples and the means of six control assays were plotted. Cp values were normalized using five housekeeping genes (HG). Bars represent SD (n=6). The results show that it is possible to identify even very small changes in gene expression in response to bortezomib treatment. For more details obtain the Cancer Research Application Note 2 at www.cancer-research.roche.com. Data kindly provided by H. Barti-Juhász, Semmelweis University, Budapest, Hungary.

**Figure 2:** HT29 cells were treated with either paclitaxel (test group) or DMSO (control). Cell growth and responses were continuously monitored using the xCELLigence RTCA SP Instrument. Using xCELLigence System Cell Index (CI) values, time points were selected for collection of sample material. High-quality RNA was purified using the High Pure RNA Isolation Kit, and cDNA was synthesized using the Transcriptor First Strand cDNA Synthesis Kit. Expression levels of 84 apoptosis-related genes were measured using the RealTime ready Human Apoptosis Panel, 96. Analyzing different time points after treatment resulted in different regulated gene profiles. Additional experimental details are described in Cellular Analysis Application Note 2 at www.cellular-analysis.roche.com




**A, B: Cell index profiles of HT29 cells treated with paclitaxel (blue), DMSO (red), or medium (green).** **(A)** Cell index (CI) derived proliferation profiles obtained using the xCELLigence System show initial cell attachment, logarithmic growth, and response to paclitaxel. Cells were treated at indicated times (black solid line) with 50 nM paclitaxel (blue), DMSO (red), or medium only (green). **(B)** Time points of paclitaxel addition (black solid line) and RNA Isolation (black triangles) are indicated.




**C: Gene expression levels related to apoptosis.** Gene expression quantified using the LightCycler® 480 System and RealTime ready Human Apoptosis Panel, 96 at four different time points after paclitaxel treatment of HT29 cells. Green squares indicate upregulation, red squares down-regulated genes compared to non-treated controls. Intensity of the color corresponds to the fold change in gene expression.

| Product | Cat. No. | Pack Size |
|---|---|---|
| High Pure RNA Isolation Kit | 11 828 665 001 | 1 kit (up to 50 purifications) |
| High Pure RNA Tissue Kit | 12 033 674 001 | 1 kit (up to 50 purifications) |
| High Pure FFPE RNA Micro Kit | 04 823 125 001 | 1 kit (up to 50 purifications from 1-10 µm-thick tissue sections) |
| High Pure RNA Paraffin Kit | 03 270 289 001 | 1 kit (up to 100 purifications from 10-20 µm-thick tissue sections) |
| High Pure miRNA Isolation Kit | 05 080 576 001 | 1 kit (up to 50 purifications) |
| Transcriptor First Strand cDNA Synthesis Kit | 04 379 012 001<br>04 896 866 001<br>04 897 030 001 | 1 kit (50 reactions)<br>1 kit (100 reactions)<br>1 kit (200 reactions) |
| LightCycler® 480 Probes Master (2x concentrated) | 04 707 494 001<br>04 887 301 001<br>04 902 343 001 | 5 x 1 ml (500 x 20 µl reactions)<br>10 x 5 ml (5000 x 20 µl reactions)<br>1 x 50 ml (5000 x 20 µl reactions) |
| FastStart Universal Probe Master (Rox) | 04 913 949 001<br>04 913 957 001<br>04 914 058 001 | 100 reactions<br>500 reactions<br>2,000 reactions |

| Product | Cat. No. | Pack Size |
|---|---|---|
| FastStart Universal SYBR Green Master (Rox) | 04 913 850 001<br>04 913 914 001 | 500 reactions of 20 µl volume<br>5,000 reactions of 20 µl volume |
| FastStart TaqMan® Probe Master | 04 673 409 001<br>04 673 417 001<br>04 673 433 001 | 100 reactions<br>500 reactions<br>2,000 reactions |
| FastStart SYBR Green Master | 04 673 484 001<br>04 673 492 001 | 200 reactions<br>2,000 reactions |

For detailed information about configuring and ordering RealTime ready Panels and Single Assays, visit www.realtimeready.roche.com

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