Cancer Profiling Array II and Tissue-Specific Cancer Profiling Arrays

Obtain reliable gene expression data from a variety of cancer samples

- **Access many hard-to-obtain human tissues at an affordable price**
- **Identify tumor-specific markers, tumor suppressor genes, or potential drug targets**
- **Generate statistically significant data for determining gene relevance in cancer**

BD Biosciences Clontech introduces a new addition to our line of Cancer Profiling Products. The **Cancer Profiling Array II** contains 154 pairs of cDNAs generated from matched normal and tumor tissue samples from individual patients, spotted side by side on a nylon membrane. This new array includes 6 additional tissues not available on our original Cancer Profiling Array, so now you can seek tumor-specific markers in a total of 19 tumor types at once. Most of these tumor types are represented by 10 patients, allowing you to generate statistically significant data for your target gene in a single experiment. Like our other Cancer Profiling Arrays, this array is made using BD SMART™ technology and sample normalization, so you'll obtain reliable, accurate data when identifying cancer-specific expression changes, elucidating tumorigenic pathways, or recognizing potential drug targets.

You can also focus your gene expression study on 30 samples of a specific tumor type. Our **Tissue-Specific Cancer Profiling Arrays** provide the benefits of the Cancer Profiling Array II for specific tissue types, making focused expression profiling of your target gene easy and accurate. These arrays are ideal for researchers studying breast, colon, or lung cancer or for researchers who suspect their target genes are associated with these types of cancer. Since these arrays are manufactured on nylon membranes affixed to glass slides, you can perform high-throughput parallel hybridizations using a minimal amount of a standard radiolabeled probe, and then easily obtain data from multiple slides using normal phosphorimaging techniques.

Acquire tissue diversity at a low price

Eliminate the added time and expense of tissue acquisition, RNA isolation, and
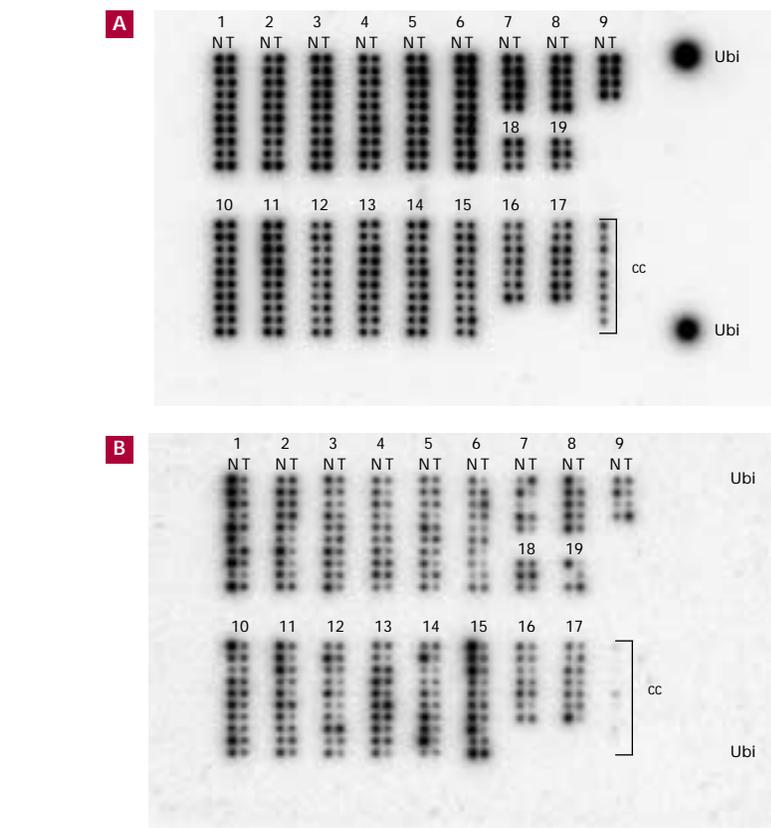

Figure 1. The Cancer Profiling Array II demonstrates tissue-specific expression of gelsolin. The Cancer Profiling Array II was hybridized separately with a radiolabeled probe for the housekeeping gene ubiquitin (**Panel A**) and a radiolabeled probe for gelsolin (**Panel B**). Hybridization signals were detected by phosphorimaging. Numbers indicate tissue types in columns. 1: breast. 2: ovary. 3: colon. 4: stomach. 5: lung. 6: kidney. 7: bladder. 8: vulva. 9: prostate. 10: uterus. 11: cervix. 12: rectum. 13: thyroid gland. 14: testis. 15: skin. 16: small intestine. 17: pancreas. 18: trachea. 19: liver. N = normal. T = tumor. Ubi = ubiquitin cDNA. cc = cancer cell line cDNAs.

membrane manufacture. Our Cancer Profiling Arrays are the ideal choice for high-throughput multiple tumor analysis. With the Cancer Profiling Array II, you can proceed directly to determining your target gene's expression in a variety of tissue types representing various stages of disease. Alternatively, choose a Tissue-Specific Cancer Profiling Array to simultaneously survey the expression pattern of your gene in 30 different tumor samples and their corresponding normal tissues from individual patients. Because each matched pair of cDNAs on these arrays comes from an individual patient, you can be sure that any differential expression you see is due to actual differences between tumor and normal tissue. Pooled samples from multiple patients can mask differences in gene expression patterns

between individuals and therefore are not included on our arrays. As an added benefit, we provide clinical information for samples represented on these arrays, so you can investigate possible correlations between expression and patient history.

Rely on accurate sample representation

Each sample cDNA on these arrays was generated from BD™ Premium RNA, which means the original starting material was pure and intact (see pages 8–9). Furthermore, the cDNA was synthesized and amplified using our patented BD SMART™ (**S**witching **M**echanism **A**t the 5' end of the **R**NA **T**ranscript) technology, which ensures that the amplified cDNA retains the original complexity and relative abundance of the tumor and

Cancer Profiling Array II and
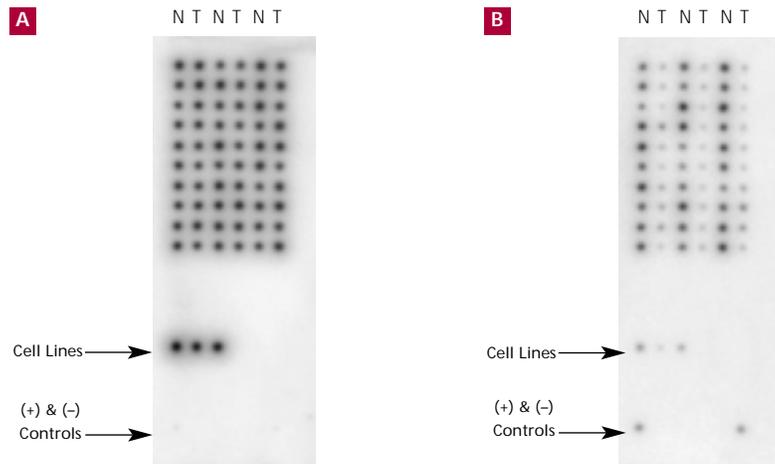# Tissue-Specific Cancer Profiling Arrays...continued

Figure 2. Differential gene expression on the Breast Cancer Profiling Array. The Breast Profiling Arrays were hybridized using a radiolabeled probe for β-actin (**Panel A**) or gelsolin (**Panel B**). Hybridization signals were detected by phosphorimaging. Thirty pairs of BD SMART™ amplified cDNAs generated from breast normal and tumor samples are spotted on the upper portion of the glass slide. The array also includes three breast cancer cell line cDNAs (MCF7, MDA-MB-231, and MDA-MB-435S). Positive controls (ubiquitin cDNA) and negative controls (yeast total RNA, yeast tRNA, *E. coli* DNA, poly A$^+$, human C_0t-1 DNA, and human genomic DNA) are spotted on the lower portion of the glass slide. N = normal. T = tumor.

normal RNA samples (1, 2). High quality starting materials and accurate sample representation mean you can have complete confidence in your results.

Achieve accurate expression results

All samples on these arrays are normalized to two different housekeeping genes: β-actin and ubiquitin. This normalization process is an integral part of our array quality. Normalization ensures a consistent hybridization signal for all the samples represented on the array while also assuring you that a true differential expression pattern exists for your gene of interest. You can be confident that your results are not due to variances in cDNA content between spots. Figures 1A and 2A demonstrate the uniform quality of these arrays when probed with a constitutively expressed housekeeping gene. Using the candidate tumor suppressor gene gelsolin as a probe, however, distinguishes a differential expression pattern in specific tumor types (Figures 1B and 2B).

Identify disease markers for drug discovery

You can use our Cancer Profiling Arrays to complement your cDNA or oligo microarray studies. These genomic approaches recognize the expression differences of many genes when comparing normal tissues with tumor tissues. When you have identified candidate genes that are either up-regulated or down-regulated in tumors, use our Cancer Profiling Arrays to further define these genes' roles in particular tumor types, and at particular tumor stages (3, 4). Simply generate a radiolabeled probe for your gene of interest and hybridize it to your chosen array.

Using the Cancer Profiling Arrays in this way can serve as a vital step in the identification of potential cancer drug targets. Because development is a costly endeavor, swift validation of candidate genes is essential to focusing on promising therapies. With our Cancer Profiling Arrays, you can generate statistically significant proof of a gene's relevance to cancer and to particular tumor types.

Product	Size	Cat. #
Cancer Profiling Array II	each	7847-1
Breast Cancer Profiling Array	each	7844-1
Lung Cancer Profiling Array	each	7845-1
Colon Cancer Profiling Array	each	7846-1

Components

- Cancer Profiling Array
- Hybridization Chamber (for Tissue-Specific Cancer Profiling Arrays)
- 2 Wash Containers (for Tissue-Specific Cancer Profiling Arrays)
- Human Ubiquitin Control cDNA Probe
- BD ExpressHyb™ Hybridization Solution
- Orientation Grid
- User Manual (PT3578-1)

Related Products

- Matched Tumor/Normal Expression Array (#7840-1)
- Cancer Profiling Array (#7841-1)
- Autoimmune Disease Profiling Array (#7843-1)
- Blood Disease Profiling Array (#7842-1)

References

1. Zhumabayeva, B., *et al.* (2001) *BioTechniques* **30**(1):158–63.
2. Zhumabayeva, B., *et al.* (July 2000) *Clontechniques* **XV**(3):22–23.
3. Sers, C., *et al.* (2002) *Oncogene* **21**:2829–2839.
4. Wiechen, K., *et al.* (2001) *Am. J. Pathol.* **159**:1635–1643.

Notice to Purchaser

BD SMART™ technology is covered by U.S. Patents #5,962,271 & 5,962,272.

The PCR process is covered by patents owned by Hoffmann-LaRoche, Inc. and F. Hoffmann-LaRoche, Ltd.

Table I: Patient representation for each tissue type included on Cancer Profiling Array II	
Tissue type	Number of samples
Breast, ovary, colon, stomach, lung, kidney, uterus, cervix, rectum, thyroid, testis, skin	10
Small intestine, pancreas	7
Bladder, vulva	5
Prostate	4
Trachea, liver	3