Applied Biosystems® Arcturus® Turbo Labeling™ Kits

Microarray Labeling for Gene Expression Profiling

Benefits

- Simple—platform-independent aRNA labeling protocol typically takes less than 30 minutes
- Efficient—unlabeled aRNA can be preserved for downstream validation
- Effective—use of unmodified nucleotides permits exceptional representation of mRNA transcripts

Figure 1. The Applied Biosystems® Arcturus® Turbo Labeling™ Kit.

Microarray Labeling for Gene Expression Profiling

Applied Biosystems® Arcturus® Turbo Labeling™ Kits from Life Technologies offer a proprietary, non-enzymatic technology optimized for the labeling of unmodified, amplified RNA (aRNA) for gene expression profiling (Figure 1). The aRNA is labeled post-amplification, thereby avoiding the need to incorporate modified nucleotides during RNA amplification (Figure 2). The use of unmodified nucleotides in the amplification process results in aRNA with higher yields and longer aRNA fragments, thus providing better representation of the mRNA transcript for downstream analysis (Figure 4).

Turbo Labeling™ Kits include reagents to support labeling of 12 samples using either Cy®3 or Cy®5 dyes or biotin for hybridization to cDNA or oligonucleotide arrays (Figures 3 and 5).

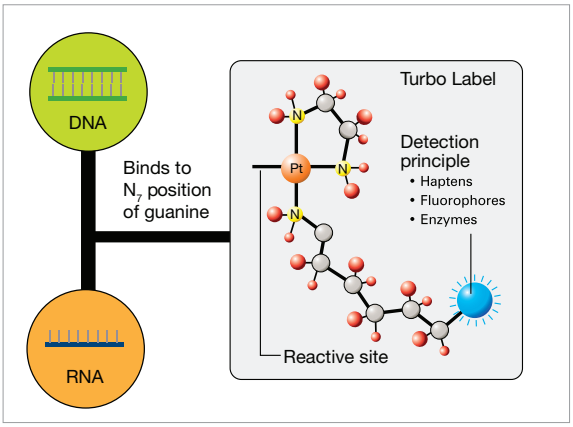

Figure 2. Using Turbo Labeling™ Kits with unmodified aRNA provides flexibility in assay format choice.

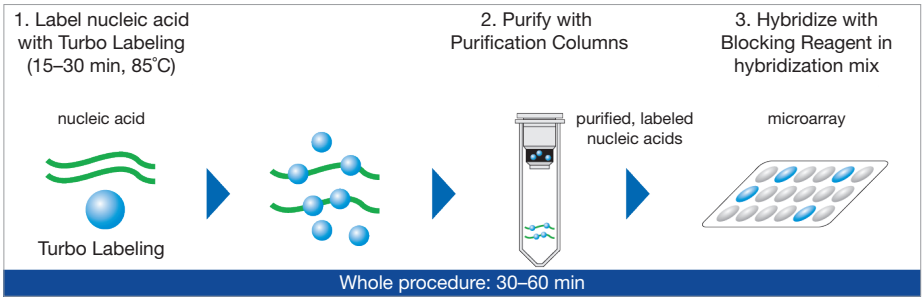

Figure 3. Schematic representation of the Turbo Labeling™ process for microarray hybridization.

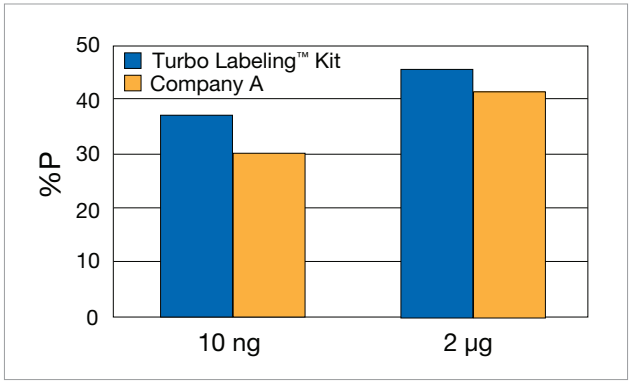

Figure 4. Percent present (%P) from Turbo Labeling™ Biotin Kit compared to an alternative labeling kit from company A. 10 ng and 2 µg of Universal Human Reference total RNA were amplified in duplicate using the RiboAmp® Plus RNA Amplification Kit, and biotinylated aRNA was prepared using either the Turbo Labeling™ Biotin Kit or Company A's biotin labeling kit. 12.8 µg of each labeled aRNA was hybridized to the GeneChip® Human Genome U133 Plus 2.0 Array. The Turbo Labeling™ kit generated higher %P calls at both RNA input levels.

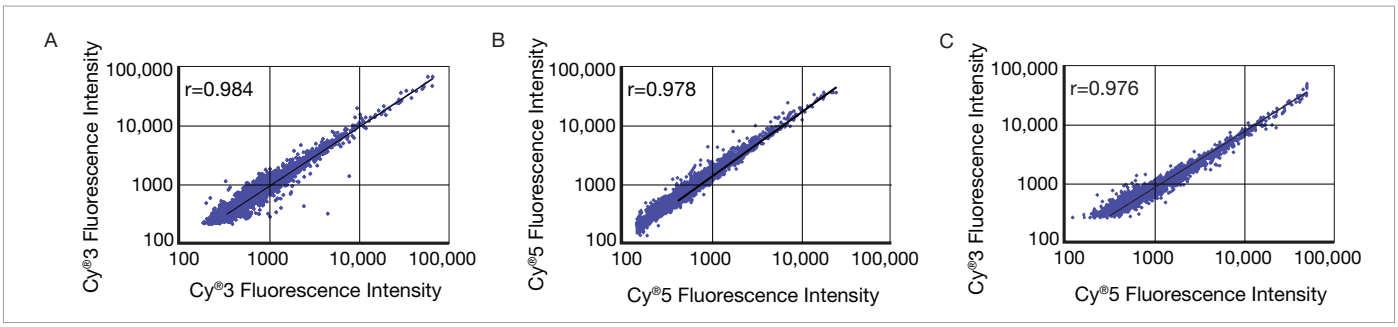

Figure 5. Reproducibility of Cy®3 and Cy®5 labeling. 10 ng of Universal Human Reference total RNA was amplified in duplicate using the RiboAmp® Plus RNA Amplification Kit, and 15 µg of aRNA from each replicate amplification was labeled with Turbo Labeling™ Cy®3 and Cy®5 Kits and hybridized to an oligonucleotide array. Spots with median intensities of ≥2x background intensity and within-spot CV of intensities of ≤20% were plotted on a scatter plot, and the Pearson correlation coefficient (r) was determined. **(A)** Replicate amplifications and labeling with Cy®3. **(B)** Replicate amplifications and labeling with Cy®5. **(C)** Comparison between Cy®3 and Cy®5 labeling. Comparison of normalized gene intensities showed excellent reproducibility across all genes (r = 0.97–0.98), suggesting comparable labeling efficiencies for Cy®3 and Cy®5 dyes and highly reproducible array data.

ORDERING INFORMATION

Description	Size	Part Number
Turbo Labeling™ Biotin Kit	12 reactions	KIT0608
Turbo Labeling™ Cy®3 Kit	12 reactions	KIT0609
Turbo Labeling™ Cy®5 Kit	12 reactions	KIT0610

For additional information on Applied Biosystems® Arcturus® Turbo Labeling™ Kits and to place your order, visit www.appliedbiosystems.com/arcturus.

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