

Advanta FFPE RNA Extraction Kit

Analyze precious samples and access valuable information



Gene expression profiling using either reverse transcription PCR-based methods or RNA-seq from formalin-fixed, paraffin-embedded (FFPE) tissue samples provides a powerful link between molecular signatures and clinical research data. However, the ability to obtain meaningful data can be limited by poor RNA quality. To address this issue, the Advanta™ FFPE RNA Extraction Kit offers an improved approach for extracting RNA from archived or fresh FFPE samples.

The Advanta FFPE RNA Extraction Kit provides an effective, nontoxic method for purifying total RNA from FFPE research samples. Optimized for isolation of high-molecular-weight RNA, the kit uses a bead-based RNA extraction method for RNA purification, helping to reduce the RNA damage that can occur with other methods (Figure 1).

More robust detection of gene targets may help researchers understand gene expression patterns and identify relevant gene expression signatures to better predict therapeutic response in the future. Improved RNA sample preparation with the Advanta FFPE RNA Extraction Kit is an additional tool to help researchers achieve these goals.

Highlights

Simple—Single-tube extraction and purification process

Safe—Xylene-free method for paraffin removal

Effective—Helps preserve the integrity of higher-molecular-weight RNA to maximize information obtained from gene expression and RNA-seq analyses

A simple single-tube workflow

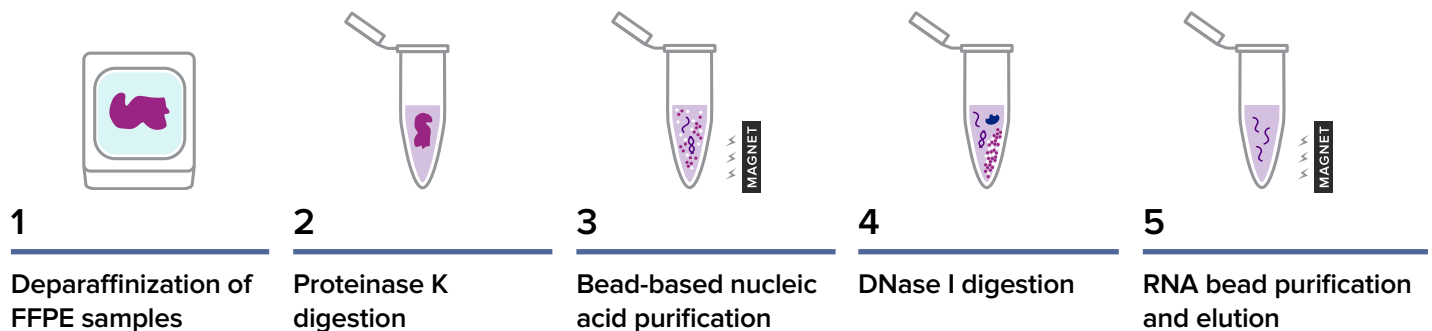


Figure 1. Workflow for RNA extraction from FFPE samples

Gene expression analysis of FFPE samples

To evaluate the performance of the Advanta FFPE RNA Extraction Kit, we performed gene expression analysis of RNA extracted from FFPE clinical research samples using the Advanta IO Gene Expression Assay, with subsequent analysis on the Biomark™ HD, a microfluidics-based real-time PCR system. The Advanta IO assay panel contains 170 unique biomarkers for assessing molecular signatures of tumor immune response and can assist in the identification of new biomarkers.

We extracted RNA from 36 samples using both the Advanta FFPE RNA Extraction Kit and a well-established commercially available product (Kit B). Samples from both extraction methods were assessed for quality using the Agilent Bioanalyzer® and the DV200 values. RNA samples were subsequently reverse-transcribed, preamplified and analyzed with the Advanta IO Gene Expression Assay on the Biomark HD system using the 96.96 Dynamic Array™ IFC (integrated fluidic circuit) for Gene Expression.

RNA samples extracted with the Advanta kit yielded a larger percentage of fragments over 200 nucleotides than did those extracted with Kit B (Figure 2). Additionally, more target genes were detected in RNA samples extracted with the Advanta FFPE RNA Extraction Kit (Figure 3), with observed Cq values lower than values from samples extracted using Kit B.

Similarly, favorable results were also observed with RNA-seq libraries prepared from four FFPE research samples analyzed with the TruSeq® RNA Access Library Prep Kit (Illumina®). Library yields were higher for RNA samples extracted with the Advanta FFPE RNA Extraction Kit, resulting in a greater number of genes detected compared to libraries prepared from the same samples extracted using Kit B (Figure 4).

Gene expression targets detected

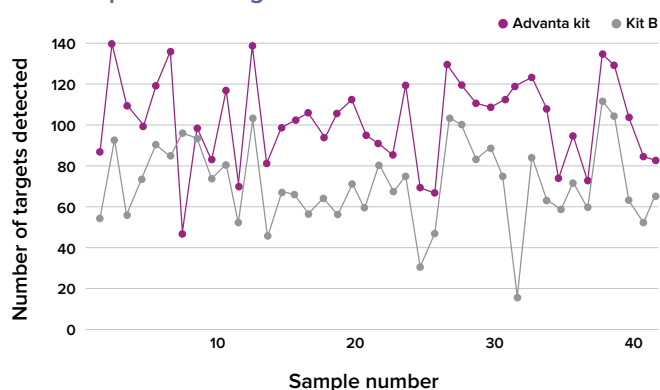


Figure 3. Number of targets detected (Cq <22) with the Advanta IO Gene Expression Assay in samples extracted with the Advanta FFPE RNA Extraction Kit compared to samples extracted with Kit B.

Number of genes detected

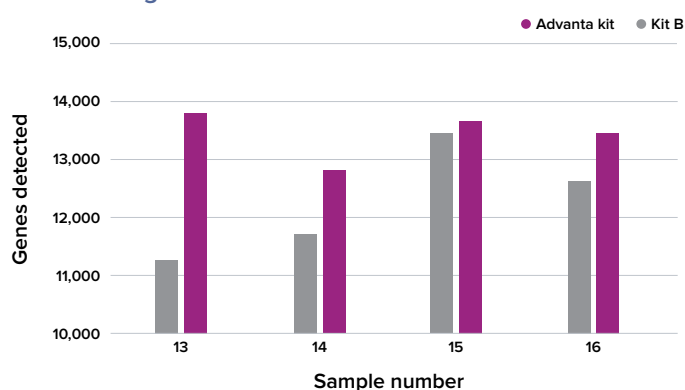


Figure 4. Number of genes detected by RNA-seq in samples extracted with the Advanta FFPE RNA Extraction Kit compared to RNA from the same samples extracted with Kit B.

Ordering information

Product Name	Part Number
Advanta™ FFPE RNA Extraction Kit	101-6773

Percent RNA fragments over 200 nucleotides

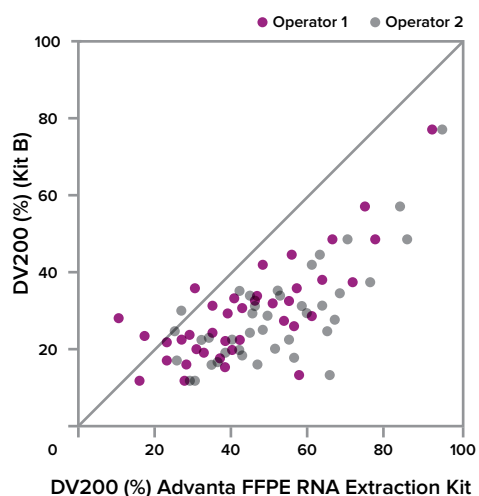


Figure 2. Percentage of fragments over 200 nucleotides in RNA extracted with the Advanta FFPE RNA Extraction Kit compared to RNA extracted using another commercially available product (Kit B). Each point represents a unique FFPE sample (average of 3 replicates) analyzed by two operators. RNA extraction with the Advanta FFPE RNA Extraction Kit yields a higher proportion of larger RNA fragments vs. extraction with Kit B.

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