

Mag-Bind® FFPE DNA/RNA 96 Kit

Sequential isolation of both DNA and RNA from the same FFPE sample using magnetic beads



DNA/RNA Co-Extraction

Efficient separation of DNA and RNA from the same FFPE sample



Specialized Buffer System

Removal of formalin-induced cross-links for high yielding nucleic acids



Magnetic Bead-Based

Scalable, automation-friendly purification



Quality

Sequencing Quality DNA and DNA-free RNA preparations



Safety

No Xylene used for deparaffinization

Mag-Bind® FFPE DNA/RNA 96 Kit

is designed for the sequential isolation of DNA and RNA from the same formalin-fixed, paraffin-embedded (FFPE) tissue sample. The protocol utilizes non-toxic mineral oil in combination with heat for efficient deparaffinization of the FFPE sample eliminating the use of hazardous xylene. The specially formulated buffers reverse cross-linking without the need for overnight digestion resulting in high-yielding, high-quality nucleic acids. The isolation protocol allows for extraction of both DNA and RNA in separate eluates from the same sample for a comprehensive analysis of both the nucleic acids. Purified DNA and RNA are suitable for variety of downstream applications including SNP analysis, sequencing, and genotyping. The Mag-Bind® system is fully automatable on Hamilton Microlab® STAR™, Tecan Freedom Evo®, Thermo KingFisher® Flex™, and other open-ended workstations.

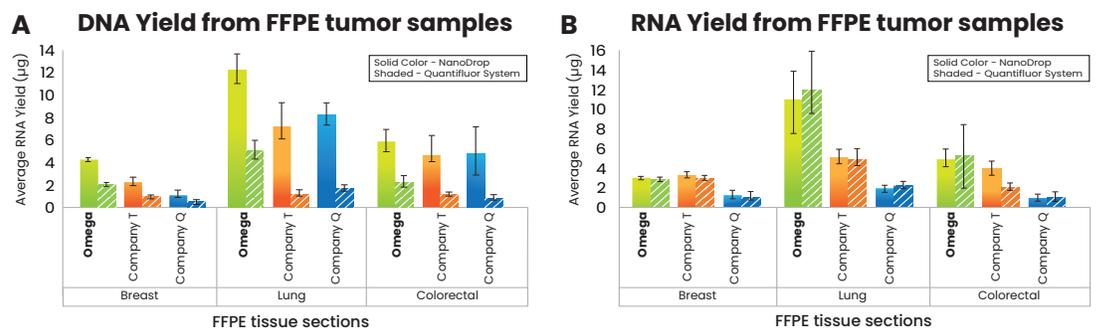


Figure 1. Average DNA (A) and RNA (B) yields from FFPE tumor samples. Genomic DNA (A) and RNA (B) was sequentially isolated from the same $1 \times 10 \mu\text{m}$ section of the FFPE tumor tissue sample ($n=3$) using Omega Bio-tek's Mag-Bind® FFPE DNA/RNA 96 Kit and comparable kits from Company T and Company Q following manufacturer's recommended protocols. Purified DNA and RNA was quantified using Thermo Scientific's NanoDrop™ 2000c system as well as Promega's QuantiFluor® dsDNA and RNA system.

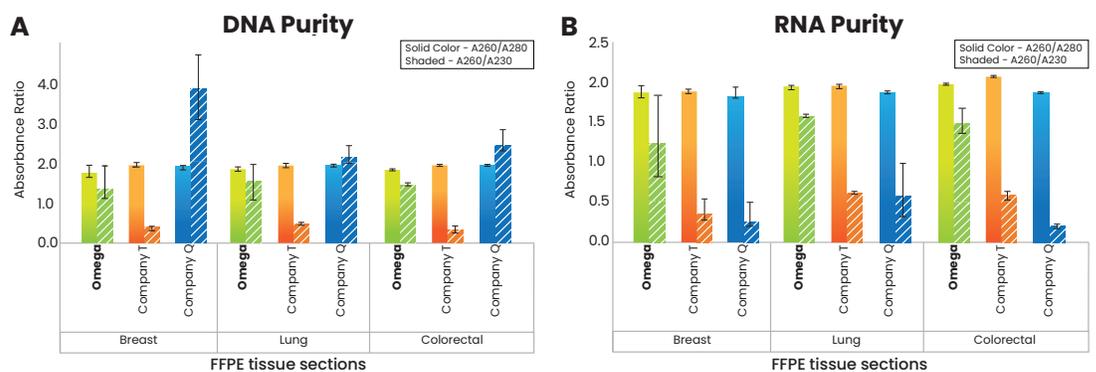


Figure 2. Purity of DNA (A) and RNA (B) isolated using different manufacturer's kits was analyzed through spectrophotometry focusing on A260/A280 and A260/A230 ratios.



innovations in nucleic acid isolation

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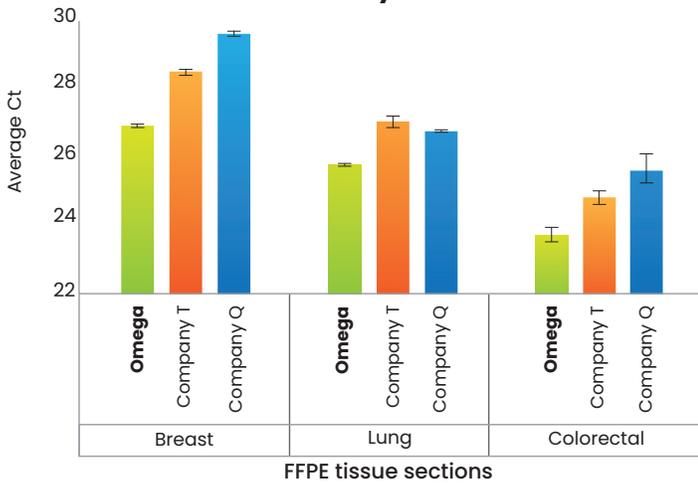
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Lit No. SL-0115

A Real-time PCR analysis on extracted DNA



B Real-time PCR analysis on extracted RNA

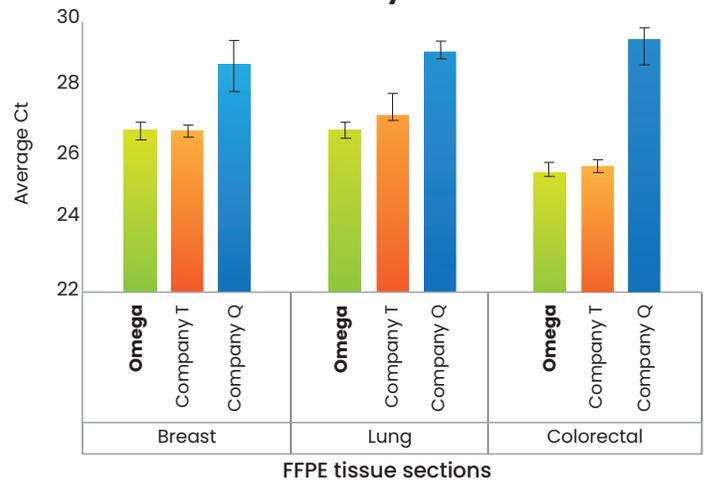


Figure 3. Real-time PCR with human DNA- and RNA-specific primers was performed in triplicate on 10-fold dilution of DNA (A) and RNA (B) eluates respectively. Average Ct values obtained amplifying the purified DNA and RNA from the same FFPE tumor sample (n=3) following the respective manufacturer's recommended protocols are shown above.

Small Variant Calling - Colorectal tumor tissue

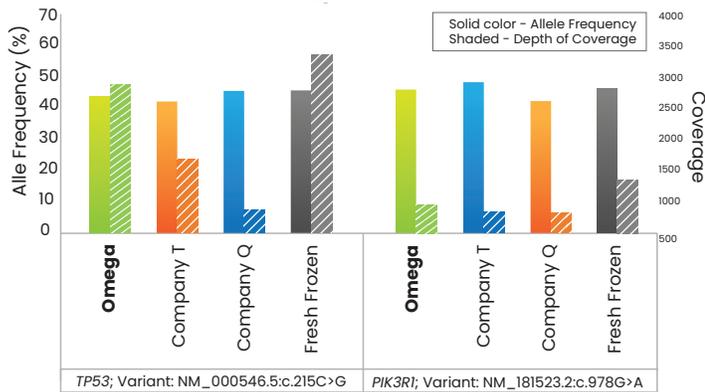


Figure 4. Small Variant Calling Analysis on DNA from FFPE colorectal tumor tissue sample extracted from different kits compared to fresh frozen control.

Table 1. Average DV₂₀₀ value (percentage of fragments >200 nt) of RNA purified using different kits analyzed on Agilent's TapeStation® 2200.

FFPE Tumor Tissue Type	Kit Manufacturer	DV ₂₀₀ region of purified RNA (%)
Breast	Omega Bio-tek	74.90
	Company T	70.54
	Company Q	59.38
Lung	Omega Bio-tek	76.86
	Company T	69.85
	Company Q	60.28
Colorectal	Omega Bio-tek	70.97
	Company T	66.75
	Company Q	38.40

Table 2. ΔCq values of DNA extracted from FFPE and non-FFPE colorectal tumor tissue samples using kits from different manufacturers.

Kit Manufacturer	Colorectal tissue sample	Cq (or Ct)	ΔCq relative to fresh frozen
Omega Bio-tek	FFPE	25.42	3.10
Company T	FFPE	26.39	4.06
Company Q	FFPE	27.64	5.32
n/a	Fresh Frozen	22.33	n/a

Table 3. DNA from FFPE tumor samples was extracted, evaluated using the TruSight Tumor 170 assay, and sequenced on the HiSeq™ X System. The metrics of Median insert size, % Exon Bases 250X coverage and % aligned reads for different extraction methodologies are as listed below.

FFPE Tumor Tissue Type	Kit Manufacturer	Median insert size	% Exon bases 250X	% Aligned reads
Breast	Omega Bio-tek	165	96.8	84.9
	Company T	164	94.5	84.6
	Company Q	161	94.0	82.5
Lung	Omega Bio-tek	162	93.9	83
	Company T	162	89.4	83.5
	Company Q	149	79	53.8
Colorectal	Omega Bio-tek	160	96.1	82
	Company T	157	95.2	80.3
	Company Q	156	91.8	77.8
	Fresh frozen	176	95.9	89.5

Product Description	Preps	Cat No.
Mag-Bind® FFPE DNA/RNA 96 Kit	1x96	M6955-00
	4x96	M6955-01