BECKMAN COULTER
Life Sciences

Manual or Automated RNA, DNA or Total Nucleic Acid Extraction from FFPE Tissues

FormaPure XL Reagent Kits

Nucleic acid extraction from formalin-fixed, paraffin-embedded (FFPE) tissue is challenging due to the nature of the tissue preparation. FormaPure XL reagent kits represent a single-chemistry system with demonstrated capability for use in Next-Generation Sequencing (NGS) as well as other downstream applications including qPCR. Maximizing integrity, yield and purity from an FFPE sample is required to minimize the risk of losing important genetic information.

- Data showing consistent extraction of NGS compatible RNA and/or DNA from a single FFPE sample
- Demonstrated flexible single chemistry system for use with 10 µM to 70 µM sample input
- Higher integrity nucleic acids supporting improved sensitivity for qPCR and NGS applications*

Don't lose critical data

FormaPure XL reagent kits are the clear choice for nucleic acid extraction from FFPE tissues.

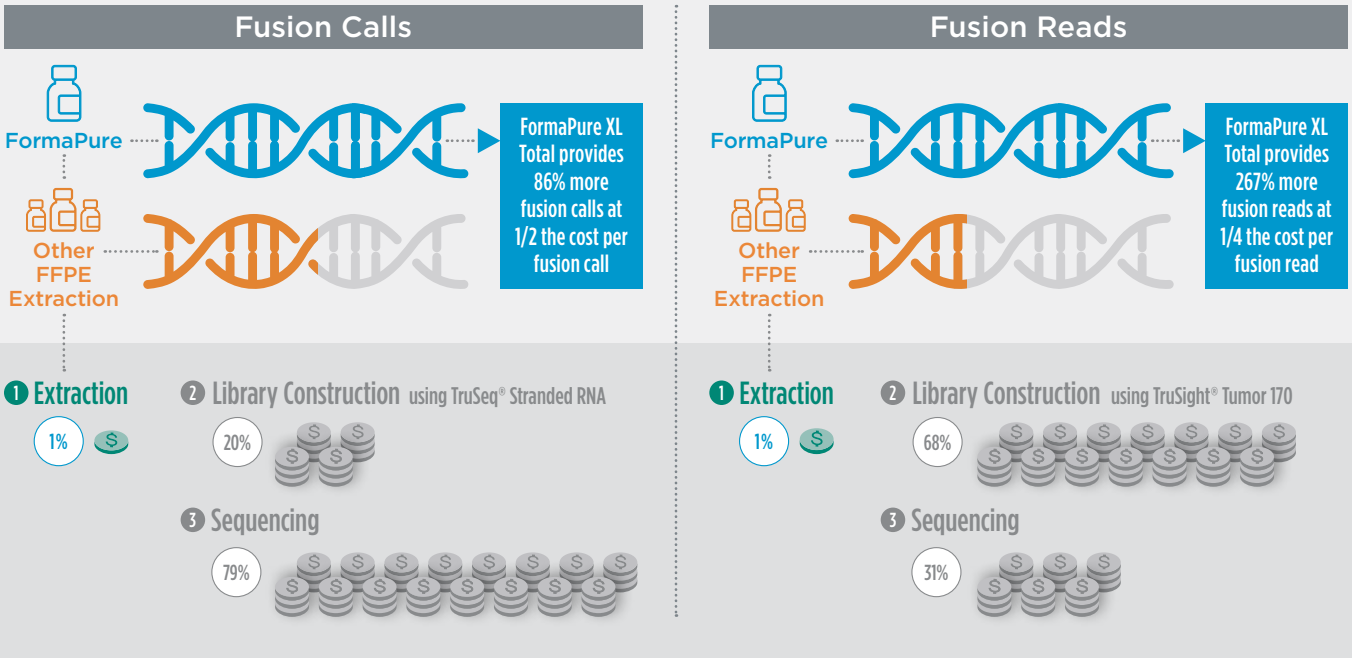


Figure 1. Comparative NGS fusion data and relative cost percentages for the workflows using TruSeq® Stranded RNA (left) and TruSight® Tumor 170 (right) were obtained empirically using reference FFPE tissues. Libraries were sequenced as part of 8- and 16-multiplexed run for TruSeq Stranded RNA and TruSight Tumor 170, respectively.

* Illumina. (2016) Evaluating RNA quality from FFPE samples: guidelines for obtaining high-quality RNA sequencing results from degraded RNA with Illumina RNA enrichment assays. Technical Note: RNA sequencing.

NGS performance starts with RNA integrity. Fragment analysis shows FormaPure XL reagent kits extract RNA with higher percent DV200 scores than RNA extracted from the same block using a column based kit. Higher percent DV200s can result in a better performing NGS

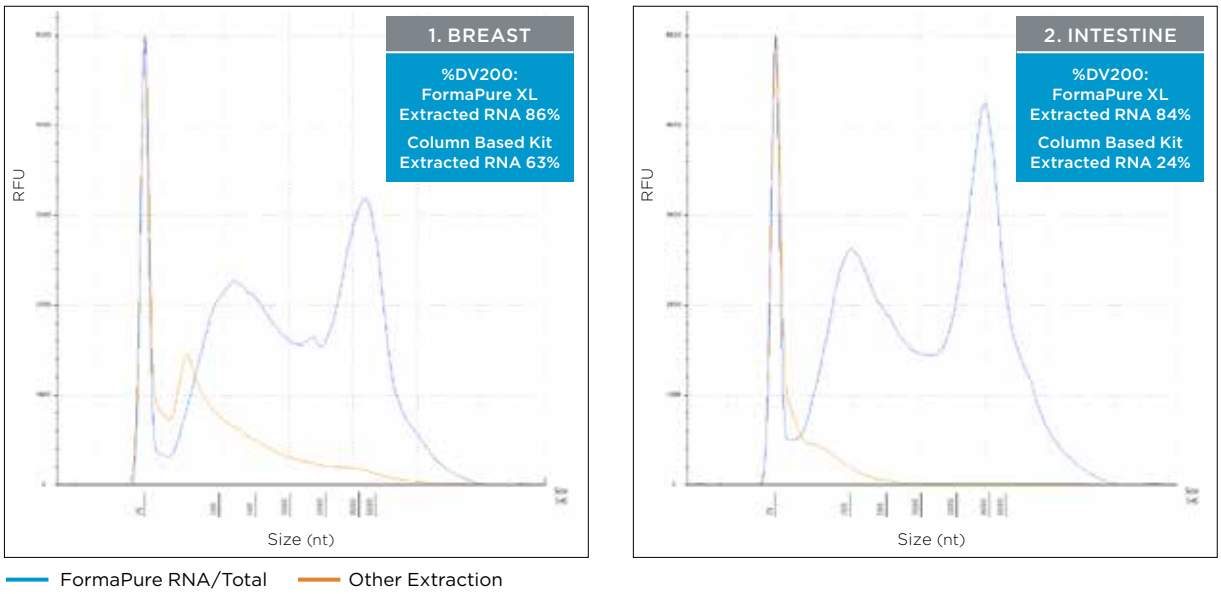


Figure 2. FormaPure XL Total and FormaPure XL RNA isolates RNA with higher integrity than a column based kit. RNA was evaluated on the Agilent RNA ScreenTape. RNA isolated with FormaPure XL RNA (blue traces) and an alternative column based kit (orange traces) from four different FFPE samples. Extractions from breast and intestine were performed with seven 10 µm. The DV200 values are presented for each of the electropherogram. The percent DV200 values represent the percentage of RNA fragments greater than 200 nucleotides.

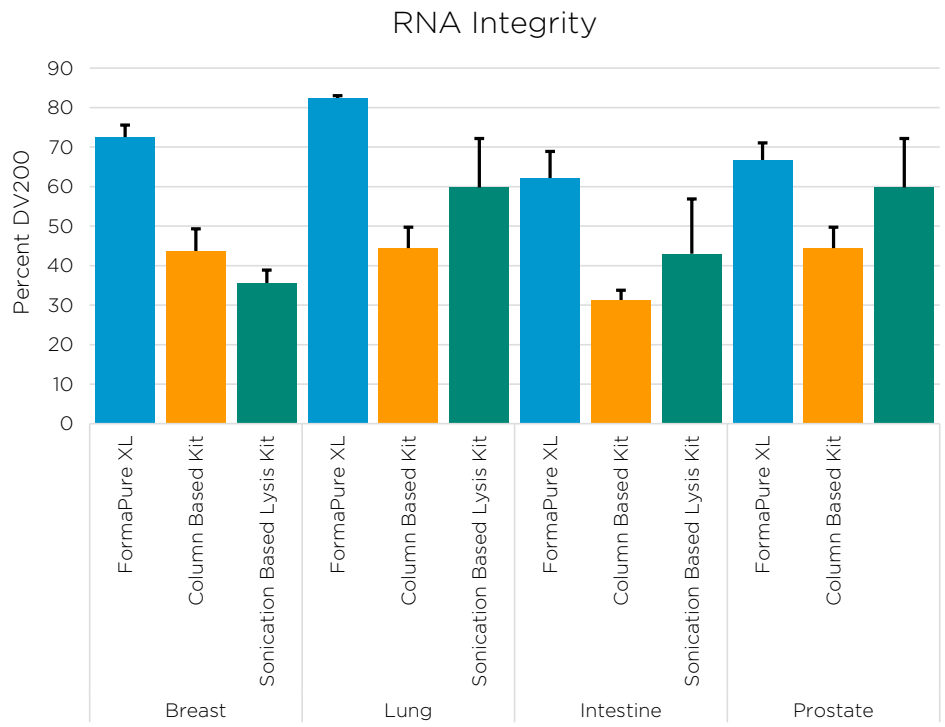
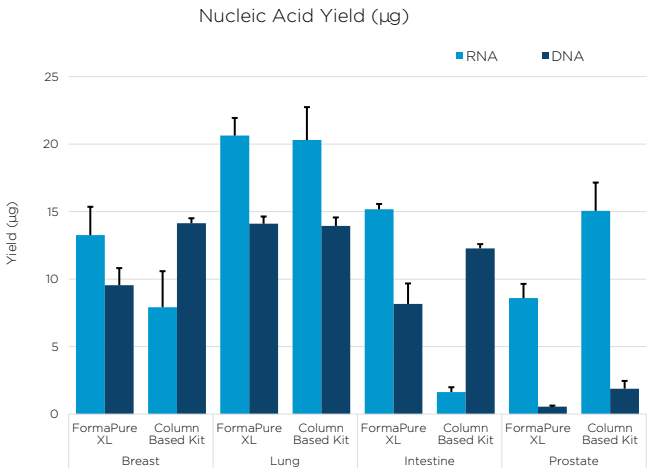


Figure 3. FormaPure XL Total and FormaPure XL RNA isolates RNA with equal or higher integrity than both a column based kit and a sonication based lysis kit as evaluated on the Agilent RNA ScreenTape. Extractions were from 1 10 uM curl of breast, intestine, prostate, and lung tissue. The average percent DV200 values are represented for three technical replicates and the error bars are representative of the standard deviation of the three technical replicates.

Nucleic Acid Yields are Determined By the Following Variables



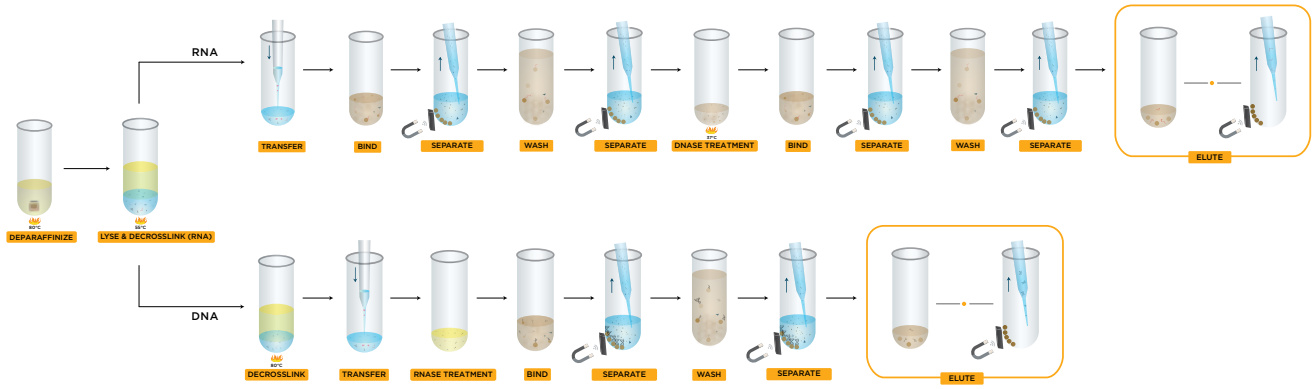
- Tissue type
- Tissue size
- Tumor type
- Fixation method
- Paraffin embedding method
- Reagents
- Storage conditions
- Tissue input amount
- Extraction chemistry
- Age of tissue block

Figure 4. RNA and DNA were isolated using FormaPure XL Total and a column based kit from 5 different FFPE tissue sample types. All extractions were performed with seven 10 µM curls. The average yield from three technical replicates is presented above. Nucleic acid yield was estimated using Quant-it assay (ThermoFisher Scientific).

FormaPure XL can allow a user to extract from their desired amounts of curls. Not every lab will receive the same amount of tissue to extract from. FormaPure XL allows the user to extract from as much or as little tissue that the user can define.

Tissue Type	Block Age (years)	RNA Yield (µg)
1	1.0	1.2
3	3.5	3.1
5	10.3	11.3
7	13.3	9.5

Table 1. RNA and DNA was isolated with FormaPure XL Total from FFPE breast tissue. An increasing number of curls were used. The nucleic acid yield increased with increasing numbers of curls except for DNA extracted from seven 10 µM curls (due to variation in tissue content within curls).



FormaPure XL Total, RNA and DNA for use in manual or automated bethods based on batch size or overall throughput

- Scalable based on throughput
- Quick transition with ready-to-implement methods
- Knowledgeable support for reagents, automation and methods from a single vendor

			FormaPure XL Total		FormaPure XL DNA		FormaPure XL RNA	
			Manual	Automated	Manual	Automated	Manual	Automated
Batch Size	8	Hands-on Time	3.5	0.5	1	0.5	2	0.5
		Total Time	6.5	6	3.5	5.25	4.5	5
	24	Hands-on Time	4	0.5	1.5	0.5	2.5	0.5
		Total Time	7	6.25	4	5.5	5	5
	48	Hands-on Time	NR	0.5	NR	0.5	NR	0.5
		Total Time	NR	6.5	NR	5.5	NR	5.5
	96	Hands-on Time	NR	0.5	NR	0.5	NR	0.5
		Total Time	NR	6.75	NR	5.75	NR	5.5

Table 2. Estimated hands-on-time and total time in hours, required to perform 8, 24, 48 and 96 FormaPure XL Total, RNA or DNA nucleic acid extractions. The methods can be performed either manually or automated on a liquid handling system. Data represented in this table is based on a Biomek i7 Hybrid. The difference in time between manual and automation is indicated. NR=Not recommended.

FormaPure XL Total

Part No	Name	Preps
C35991	FormaPure XL Total	50
C35992	FormaPure XL Total	96

FormaPure XL RNA

Part No	Name	Preps
C36000	FormaPure XL RNA	50
C36001	FormaPure XL RNA	96

FormaPure XL DNA

Part No	Name	Preps
C35996	FormaPure XL DNA	50
C35997	FormaPure XL DNA	96

FormaPure XL reagent kits are available in multiple kit sizes and extraction types based on your application and throughput needs. Contact your local sales representative or visit **beckman.com** to request a quote.

For more information, please contact:

For Beckman Coulter's worldwide office locations and phone numbers, please visit Contact Us at beckman.com

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