



# EchoLUTION™

## FFPE DNA Kit



Fast and efficient DNA extraction from FFPE samples

**The Nucleic Acid Experts.**

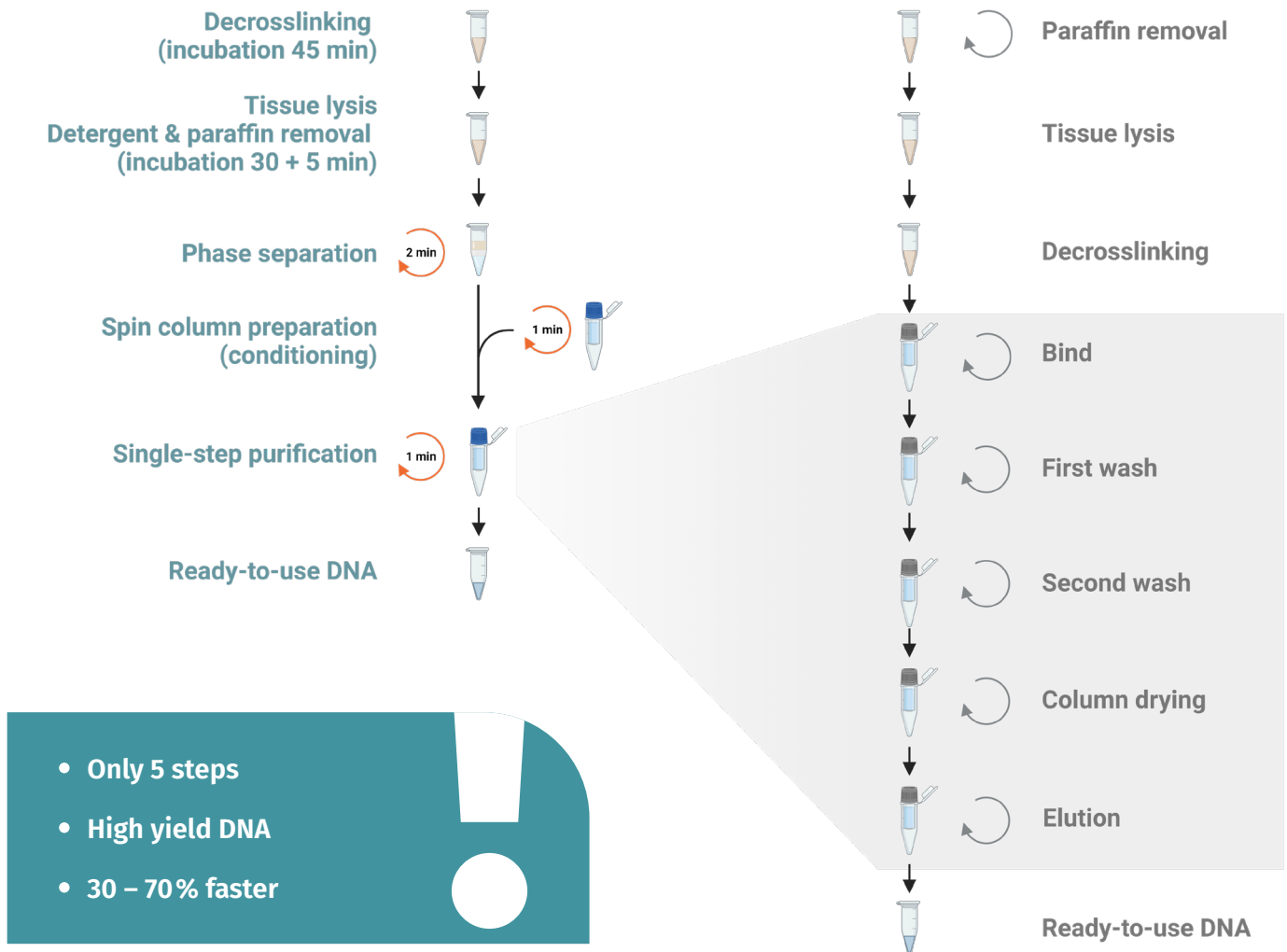
## The extraction workflow: faster and fewer steps

The EchoLUTION FFPE DNA Kit is intended for easy, rapid, and efficient DNA extraction in less than two hours. Excellent yield and high purity of total DNA can be obtained and allows use of the extracted DNA in downstream applications without further processing.



**EchoLUTION™ technology**

**Bind-wash-elute method**



### 1. FFPE decrosslinking

The crosslinks between nucleic acids and proteins introduced during formaldehyde fixation and paraffin embedding (FFPE) process are reversed in a heating step.

### 2. FFPE tissue lysis and removal of detergent and paraffin

The tissue is further lysed by addition of protease. The removal of paraffin and other detergents is performed in a separation of three phases during centrifugation.

### 3. Single-step purification

Once the lower phase containing the DNA is transferred onto the spin column, the sample is purified with a one-minute centrifugation step. The DNA passes through the purification matrix without further interaction while impurities are held back and thereby removed.

### 4. Ready-to-use DNA

The total DNA is ready-to-use for downstream applications.

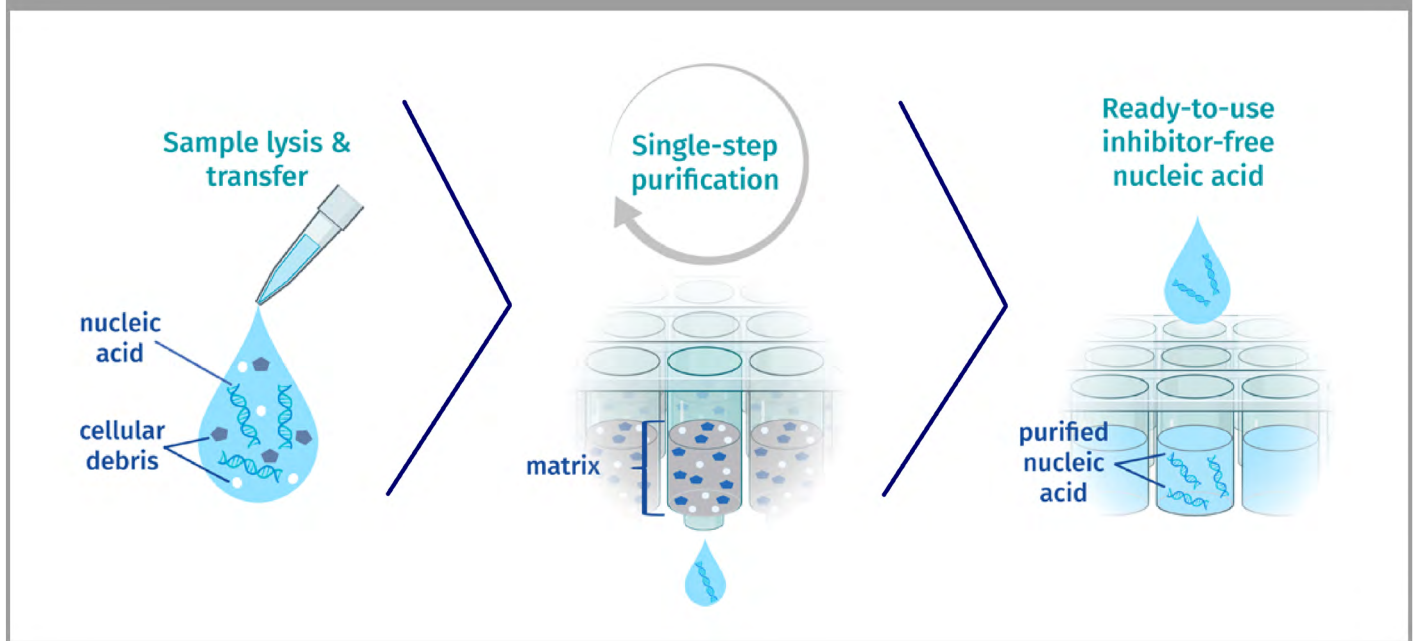
## Fast and efficient DNA extraction from FFPE samples

DNA extraction from formalin-fixed paraffin-embedded (FFPE) tissues is an essential step when performing downstream applications used in drug development, biomarker investigation, pathology, as well as in clinical diagnostics and cancer research.

The EchoLUTION FFPE DNA Kit offers a simplified workflow for efficient DNA extraction from any FFPE sample. The isolated DNA is ready-to-use in standard downstream applications such as PCR, qPCR, and sequencing.

Our EchoLUTION technology allows extraction of DNA in a single step after tissue decrosslinking, paraffin and detergent removal without the need for lengthy incubations. Impurities are held back by the purification matrix while the DNA flows through untouched.

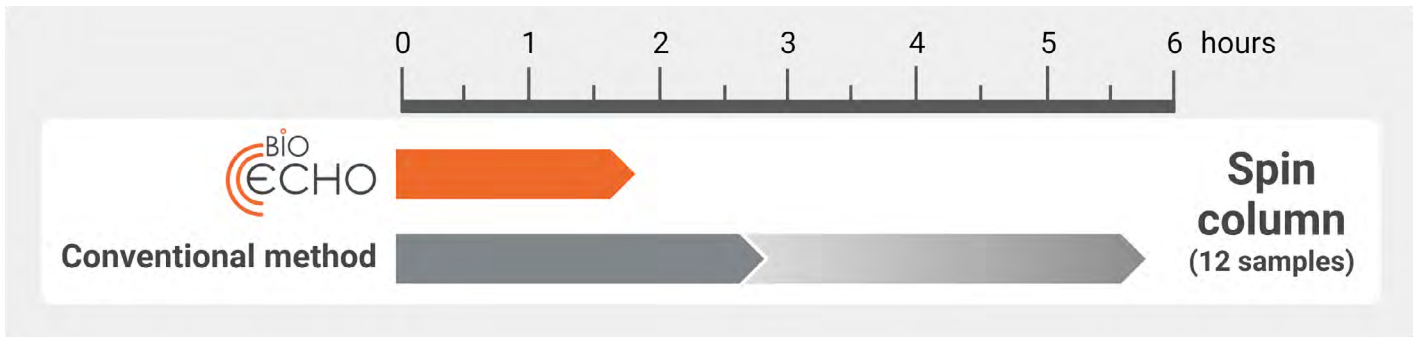
### The EchoLUTION Technology



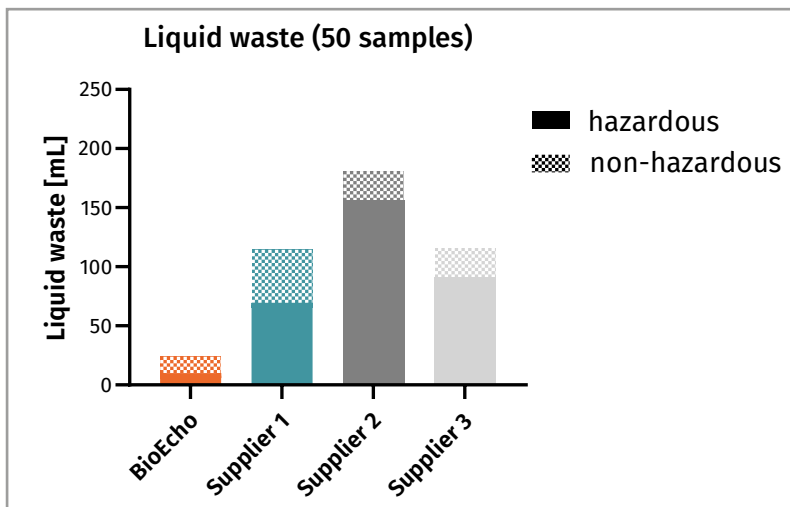
### The EchoLUTION™ FFPE DNA Kit provides:

- Convenience** → Simplified workflow with fewer hands-on steps than conventional kits
- Speed** → Optimized tissue processing combined with single-step purification leads to a protocol up to 70 % faster than established kits.
- High quality** → Competitive DNA integrity number (DIN) and fragment size
- Reliable results** → High yield DNA perfectly suited for downstream applications such as PCR, qPCR, and NGS
- Sustainability** → Reduced plastic consumption, less hazardous liquid waste, and no use of hazardous xylene or other organic solvents like ethanol

## Considerably faster compared to conventional methods

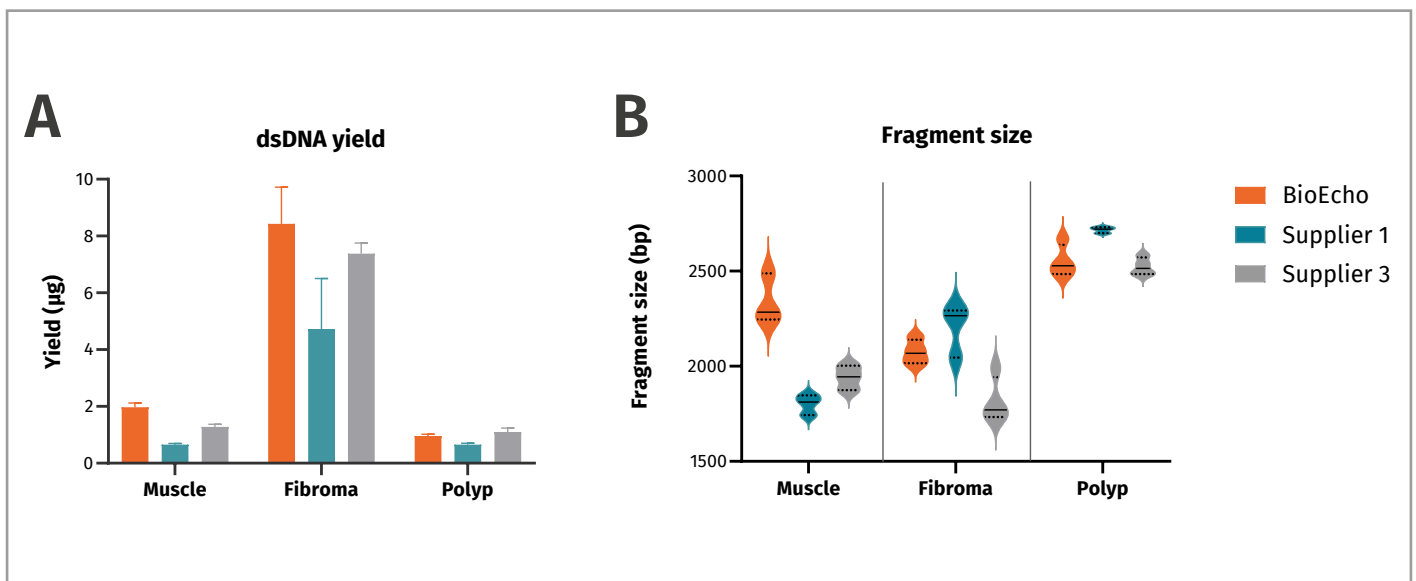


## Go green with EchoLUTION™: less hazardous liquid waste



**Figure 1.** Liquid waste collected during DNA extraction shows a significantly lower total waste as well as harmful waste with **EchoLUTION**. The estimation was performed with all liquids needed for the extraction (reagents included and not included in the kit). The classification as hazardous or non-hazardous was based on the hazard pictograms on the reagent bottles, which are based on the Globally Harmonised System of Classification and Labelling of Chemicals (GHS). Only the discarded liquids were counted.

## Get high DNA yield and competitive quality with EchoLUTION™



**Figure 2.** High DNA yield and competitive integrity with EchoLUTION FFPE DNA Kit.

**A.** Data show that DNA yield obtained with the EchoLUTION FFPE DNA Kit is comparable or higher than other suppliers' kits. Data analyzed with Qubit™. Error bars represent the standard deviation.

**B.** The DNA fragment size analysis demonstrates that EchoLUTION FFPE DNA Kit has a comparable or bigger fragment size than two additional kits on the market. Data analyzed with TapeStation®. Samples were derived from human muscle, fibroma, and endometrial polyp tissues. N = 3 – 4 biological replicates.

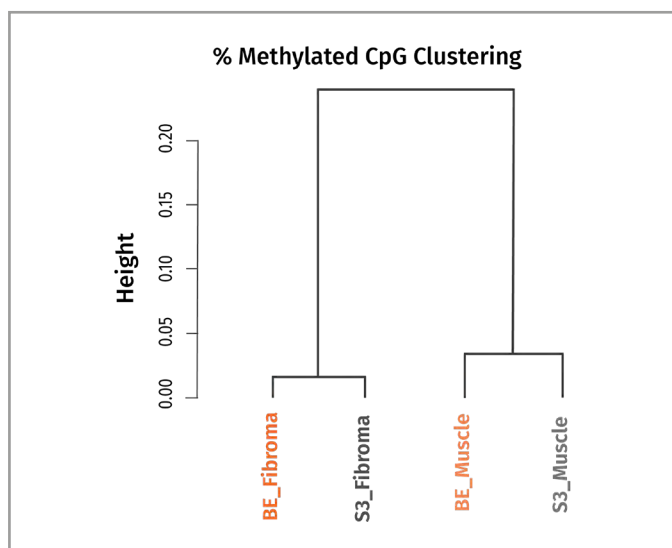
## High DNA quality ready for sequencing

### Exome sequencing

**Table 1. General quality control statistics from exome sequencing data.** Total DNA was extracted with three different kits from 10 µm slices of two independent FFPE tissues (EchoLUTION FFPE DNA Kit and two silica-based kits). Data demonstrate that the sequencing performance is comparable between the three DNA extraction kits in both FFPE tissue types. Libraries were prepared using enzymatic fragmentation and standard hybridization workflow with comprehensive exome probes provided by TWIST Bioscience according to the protocol provided by the manufacturer. Sequencing was done on a NovaSeq™ 6000 (Illumina, PE101).

Tissue sample	Basic statistics						Coverage	
	Supplier	Avg. sequence length [bp]	Median insert size [bp]	GC [%]	Duplicates [%]	Total reads [M]	Mean target coverage	Target coverage > 30x [%]
Teratoma	BioEcho	98	158	51	17	82	130	98
	Supplier 1	98	158	48	14	63	103	97
	Supplier 2	98	151	50	13	63	101	98
Fibroma	BioEcho	98	160	52	13	66	115	98
	Supplier 1	98	159	50	16	84	133	98
	Supplier 2	98	155	51	14	80	130	98

### Epigenetic analysis



**Figure 3. Hierarchical clustering of gDNA extracted from FFPE tissue samples to study epigenetic methylation pattern.** The figure depicts sample clustering based on the % of methylated CpG deduced from RRBS data (Active Motif). First, data demonstrate that the EchoLUTION FFPE DNA Kit is suitable for methylation studies. Further, our data are comparable to a silica-based extraction kit. No major effect of the DNA extraction method on methylation pattern was observed. BE stands for BioEcho (EchoLUTION FFPE DNA Kit) and S3 for another supplier kit.

### Specifications at a glance



**Sample type:** Formalin-fixed paraffin-embedded (FFPE) tissue



**Processing:** Manual through centrifugation/semi-automated with liquid handler/robot



**Sample input:** 100 – 800 mm<sup>2</sup> surface area (10 µm thickness) or 1 – 15 mg FFPE tissue



**Elution volume:** ~80 µL



## Ordering information

Product	Quantity	Product no.
EchoLUTION FFPE DNA Kit (10)	10 rxn	010-005-010
EchoLUTION FFPE DNA Kit (50)	50 rxn	010-005-050
EchoLUTION FFPE DNA Kit (250)	250 rxn	010-005-250
BioEcho Cap Puncher*	1 piece	050-001-001

\*Optional, for convenient handling of spin columns



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