



Genomic DNA isolation from Mammalian Tissue Samples

DNAdvance

The DNAdvance kit is a genomic DNA (gDNA) isolation reagent kit built on SPRI paramagnetic bead-based technology. It enables the purification of high quality DNA from tissue samples. The DNAdvance kit offers greater recovery of high quality gDNA than other commercially available DNA extraction kits. The extraction can be run manually in a 2 mL tube format or 96-well format, or automated in 96-well format on variety of Beckman Coulter Biomek liquid handling workstations. The DNA isolated can be used for a variety of downstream analysis including NGS.

- Compatible with PCR based downstream applications
- Over 3 times the yield vs other extraction shown here
- Manual and automated workflows available

High recovery of high quality gDNA

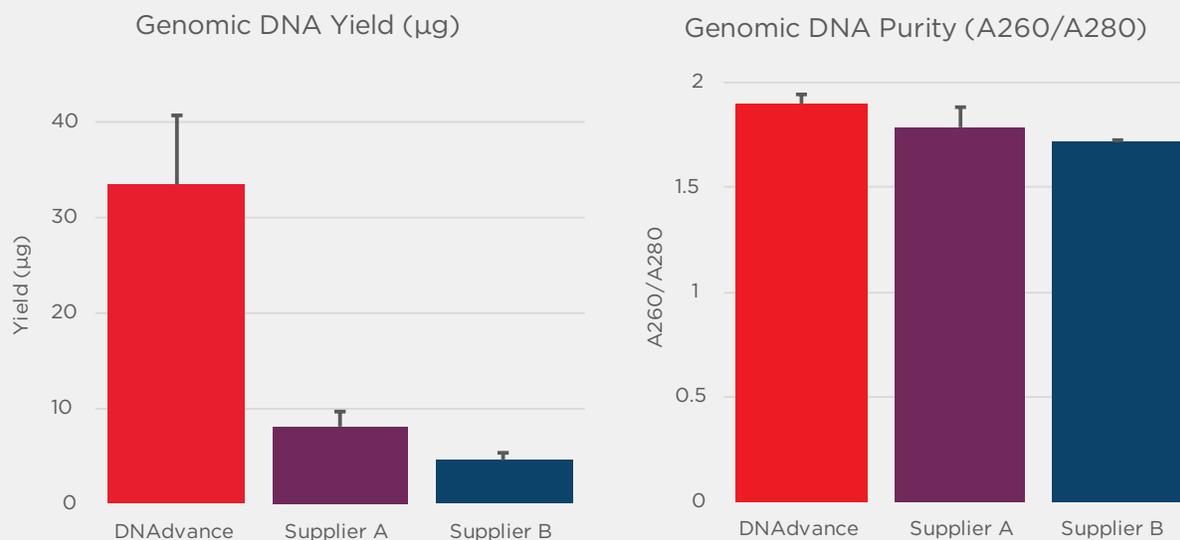


Figure 1. Genomic DNA was extracted from 20mg liver tissue using DNAdvance and other suppliers' kits. (Left) Samples were quantified using the NanoDrop (Thermo Fisher Scientific). The DNAdvance kit recovered higher amounts of gDNA than the kits from the other suppliers. (Right) Samples were assessed for purity using the NanoDrop (Thermo Fisher Scientific). Error bars represent the standard deviation of three technical replicates.

High quality high molecular weight gDNA

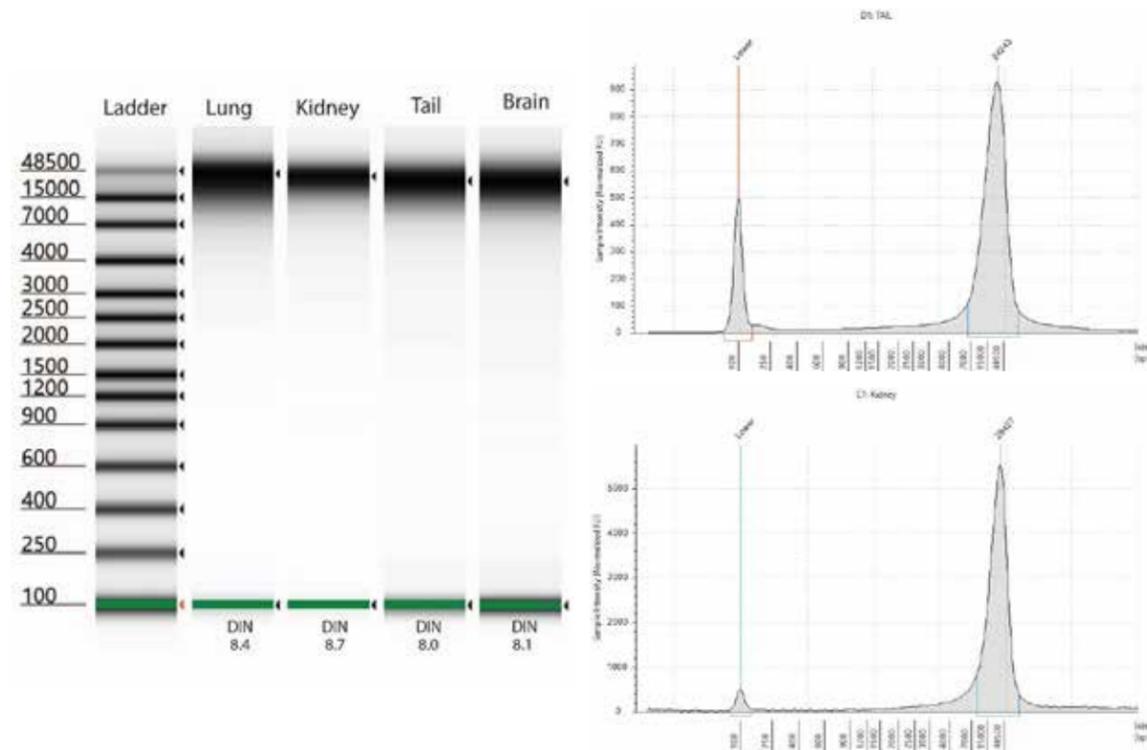


Figure 2. DNAdvance isolates high quality gDNA. Genomic DNA isolated from 4 different tissue types using DNAdvance were run on the Agilent Genomic DNA Screen Tape to assess quality. DIN values from samples isolated using DNAdvance were of high quality for all tissue types. (Right) Sample electropherogram traces of DNA extracted from tail and kidney.

No carryover contaminants to inhibit PCR amplification or downstream applications

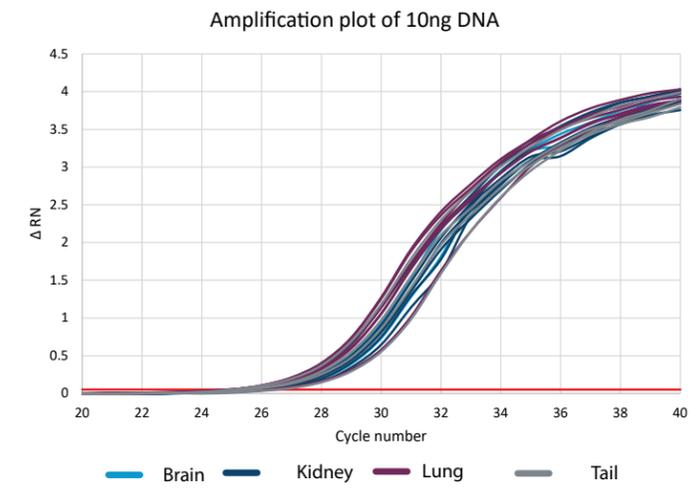


Figure 3. Ability to amplify DNA was assessed via qPCR using a primer set (forward primer 5'-ggacttcgagcaagagatgg-3' and reverse primer 5'-agcactgtgtggcgtacag-3') designed to span Exon 4 and 5 of the beta (β)-actin gene (ActB) to produce 327 base pair amplicons. The gDNA isolated from 4 tissue types isolated using the DNAdvance kit was amplifiable indicating that the kit removed PCR inhibitors.

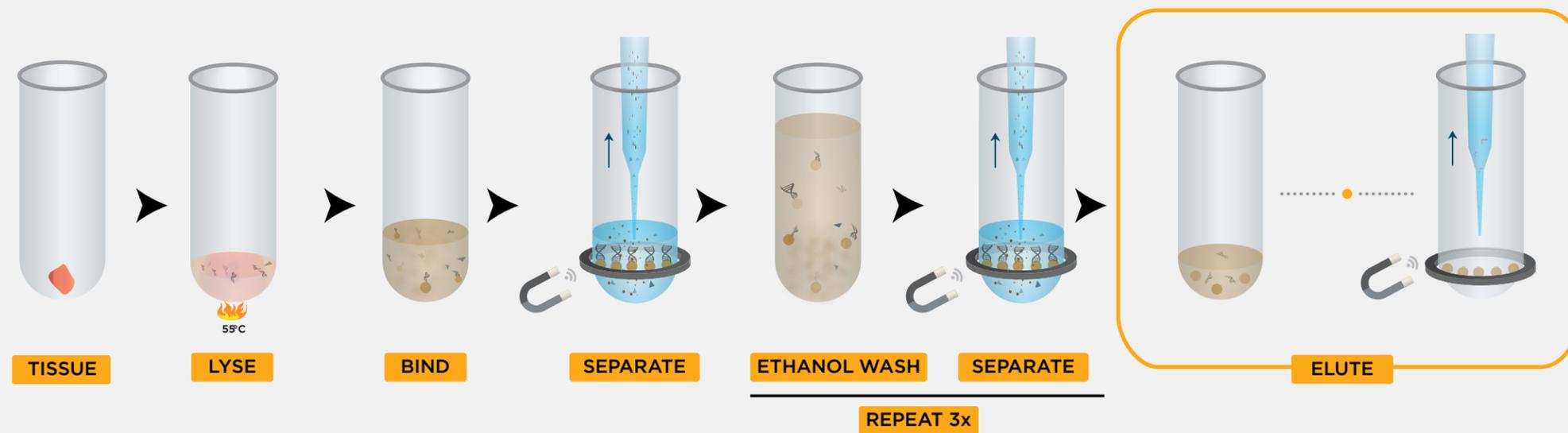
DNA can be extracted from a variety of tissue types

Tissue Type	gDNA Yield (μg)	DNA Purity (A_{260}/A_{280})
Brain	8.07	1.83
Kidney	16.1	1.84
Liver	33.5	1.90
Lung	7.28	1.77
Tail	5.38	1.76

Table 1. The gDNA yield from five different tissue types. The yields were quantified using the NanoDrop (Thermo Fisher Scientific). The purity of samples was accessed using the NanoDrop (Thermo Fisher Scientific); the A_{260}/A_{280} ratios are shown in the last two columns and are satisfactory for downstream applications.

Visual Workflow

- 1 Lyse tissue in Lysis Buffer and Proteinase K
- 2 Bind DNA to magnetic beads
- 3 Separate magnetic beads from contaminants
- 4 Wash the magnetic beads with 70% ethanol to remove contaminants
- 5 Repeat the wash step 3 times
- 6 Elute DNA from magnetic beads
- 7 Transfer to a new plate



Users can extract DNA from samples in less time with less pipette movements compared to users of column based kits

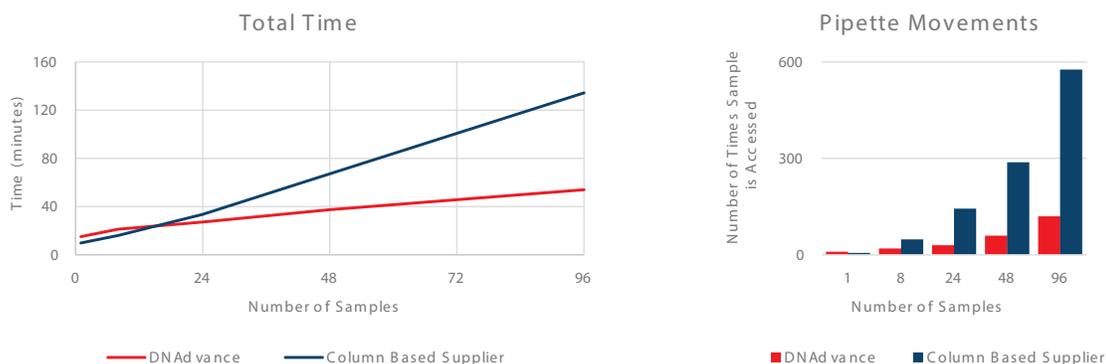


Figure 4. (Left) Represents total time to extract gDNA for 1 to 96 samples using DNAdvance or a column based supplier. Even at 15 samples total time to extract DNA from tissues is faster using DNAdvance. (Time excludes lysis) (Right) The total number of times a sample is accessed required for 1, 8, 24, 48, and 96 samples. With the ability to use a multichannel pipette there is significantly less pipette movements that need to take place than with column based suppliers.

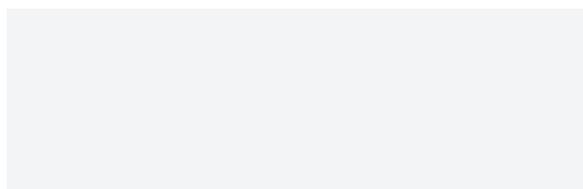
For use in manual or automated methods based on batch size or overall throughput

			DNAdvance	
			Manual	Automated
Batch Size	8	Hands-on Time	0.25	0.25
		Total Time	0.50	0.87
	24	Hands-on Time	0.25	0.25
		Total Time	0.50	0.87
	96	Hands-on Time	NR	0.25
		Total Time	NR	0.87
	480	Hands-on Time	NR	0.25
		Total Time	NR	2.25
	960	Hands-on Time	NR	0.25
		Total Time	NR	4.25

Table 2. Estimated hands-on time and total time in hours, required to perform DNAdvance DNA extractions. The estimated time does not take in to account the overnight lysis step. The chemistry can be performed either manually or automated. Times represented in this table are based on a Biomek i5/i7 Multi channel with a 1200 μ L head. Difference in time between manual and automation is indicated. NR=Not Recommended.

DNAdvance Reagent Kit is available in 2 kit sizes based on your throughput needs. Contact your local sales representative or visit beckman.com to request a quote.

For more information, please contact:



Product Information

Part No	Name	Preps
A48705	DNAdvance Kit	384
A48706	DNAdvance Kit	9600

Not intended or validated for use in the diagnosis of disease or other conditions.



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