

ExScale[®] Next Generation Extraction technology (NGEx[®]) Automated and sequential isolation of DNA and RNA from FFPE tissue

Introduction

Automated purification of DNA and RNA from the same specimen is essential for a number of reasons. First, it is necessary for the reliable comparison of genomic and transcriptomic data. Second, it minimizes consumption of precious biospecimens and third, it significantly reduces turnaround time and labour costs compared to isolating each separately.

Using NGEx[®] technology, ExScale can sequentially isolate both DNA and RNA from a single FFPE tissue specimen using magnetic bead-based extraction technology. This is of particular importance when dealing with FFPE tumor specimens as material is often limited (e.g. biopsies) and tumors display high regional heterogeneity, meaning that comparing genomic and transcriptomic data from two separate sections may provide misleading results.

Features and Benefits

ExScale offers nucleic acid purification kits and software that can isolate both DNA and RNA from the same FFPE tissue specimen. The system is fully automated and easy-to-use. The pre-filled cartridges and the user-friendly instrument start panel makes the procedure extremely versatile in a multiuser environment.

- Fully automated on Magtration[®] system magLEAD 12GC
- CE marked for IVD
- Reduction of manual handling errors
- Maximum output with minimal sample consumption
- Releases and separates DNA/RNA without compromising integrity
- User and environmentally-friendly chemicals and processes

Conclusion

The ExScale FFPE DNA/RNA Purification kit provides a highly efficient automated method for extraction of DNA and RNA from FFPE tissue.

The extraction protocol is fully automated using a liquid handling robotic workstation that can handle 1-12 samples simultaneously with a user-friendly interface. All steps, including tissue deparaffinization using a non-toxic agent, are performed inside the instrument, resulting in minimal hands-on time for the user.

Total run time is between 3 hr 10 min (easy-to-lyse tissue) or 4 hr 30 min (fibrous or muscular tissue). The magLEAD 12GC is an easy-to-use instrument for a multiuser environment, which decreases the risks for human errors. Built in UV light and pre-filled cartridges reduce risk of sample contamination.



Figure 1. The Magtration[®] system magLEAD 12GC instrument (Precision System Science Co., Ltd) can process 1-12 samples simultaneously.



Figure 2. Prefilled cartridges reduce hands-on time and manual handling errors

Results

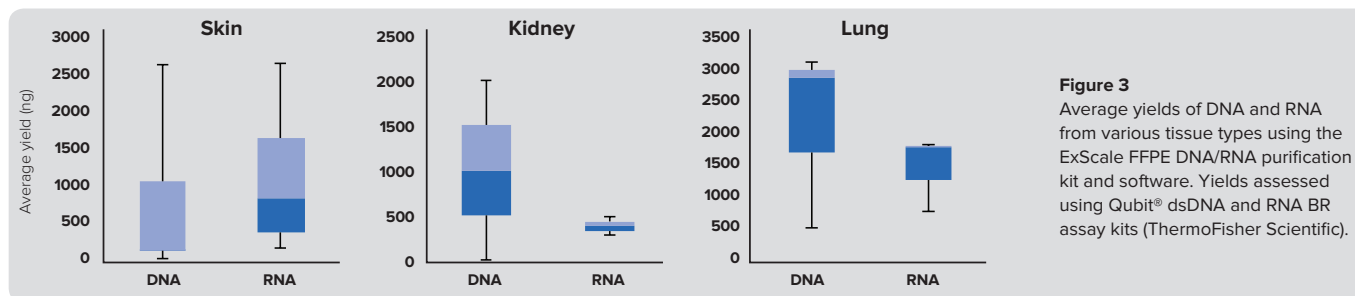


Figure 3
Average yields of DNA and RNA from various tissue types using the ExScale FFPE DNA/RNA purification kit and software. Yields assessed using Qubit[®] dsDNA and RNA BR assay kits (ThermoFisher Scientific).

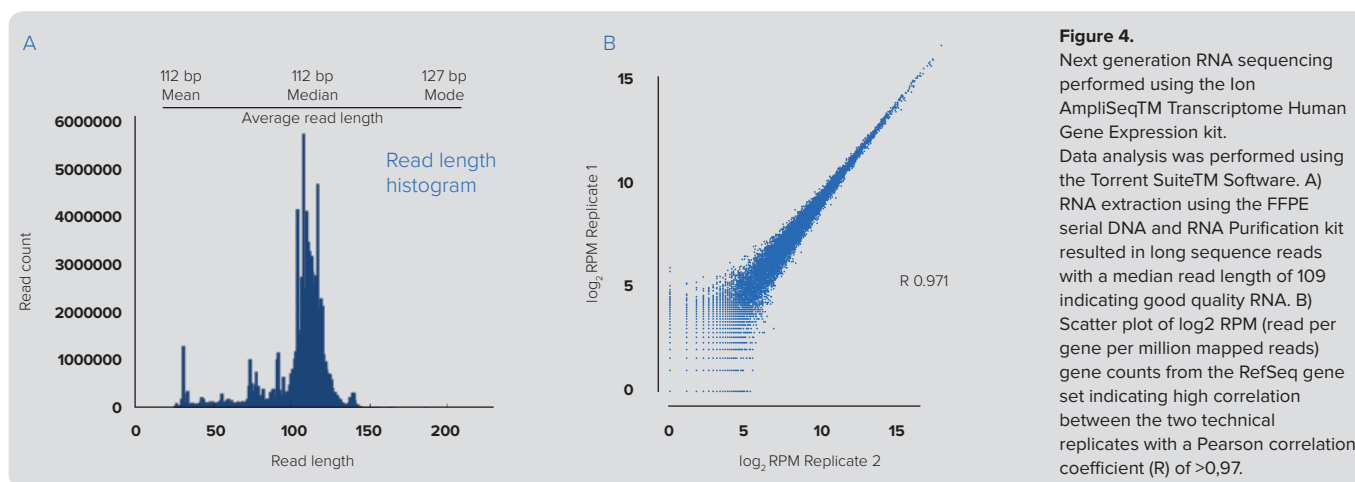


Figure 4.
Next generation RNA sequencing performed using the Ion AmpliSeq[™] Transcriptome Human Gene Expression kit. Data analysis was performed using the Torrent Suite[™] Software. A) RNA extraction using the FFPE serial DNA and RNA Purification kit resulted in long sequence reads with a median read length of 109 indicating good quality RNA. B) Scatter plot of log₂ RPM (read per gene per million mapped reads) gene counts from the RefSeq gene set indicating high correlation between the two technical replicates with a Pearson correlation coefficient (R) of >0,97.

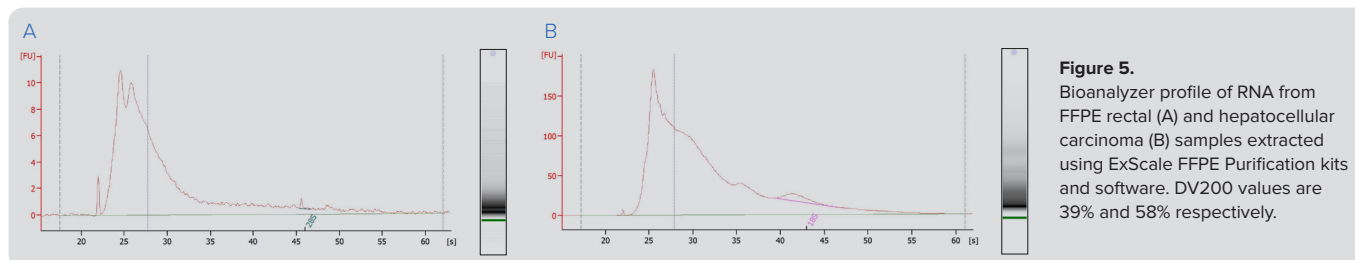


Figure 5.
Bioanalyzer profile of RNA from FFPE rectal (A) and hepatocellular carcinoma (B) samples extracted using ExScale FFPE Purification kits and software. DV200 values are 39% and 58% respectively.

Ordering information

Product	Description	Article no.
ExScale FFPE DNA/RNA Purification Kit and Software*	Prefilled reagent cartridges, deparaffinization agent and plasticware for 48 extractions	ES-K110210FP-C and ESP-S110210FP-C

*CE marked according to IVD 98/79/EC for use on Magtration[®] system magLEAD 12GC (Precision System Science Co., Ltd).

For more information, see our website exscalebio.com

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