

PicoPure DNA Extraction Kit

Prepare PCR-ready DNA fast

Benefits

- Go directly to PCR
- Maximize DNA recovery
- Extract DNA for any PCR application
- Compatible with most tissues and cell preparation methods



Figure 1. PicoPure DNA Extraction Kit.

DNA extraction direct to PCR

The Applied Biosystems™ PicoPure™ DNA Extraction Kit from Thermo Fisher Scientific offers an easy, streamlined genomic extraction procedure that produces PCR-ready DNA. Extract and amplify DNA in the same tube, without organic extraction or spin columns. Recover DNA from as few as ten cells procured by laser capture microdissection (LCM) or from milligrams of tissue.

The PicoPure DNA Extraction Kit provides conveniently packaged, stable Proteinase K, PCR-compatible DNA reconstitution buffer, and a complete user guide (Figure 1). In this optimized kit, each of 10 lyophilized Proteinase K aliquots can be freshly reconstituted to make 150 µg of PicoPure™ DNA Extraction Solution—enough for 150 x 10 µL Applied Biosystems™ CapSure™ HS LCM Cap extractions or 30 x 50 µL Applied Biosystems™ CapSure™ Macro LCM Cap extractions or 10 tissue scrapes.

Maximize DNA recovery

Because DNA is not lost through organic extractions or spin columns, the PicoPure kit enables reliable and reproducible DNA recovery from as few as ten cells (Figure 2).



Figure 2. Reproducible DNA extraction and PCR amplification of multiple single-copy genes.

Reproducible DNA extraction and PCR amplification of multiple single-copy genes from ten laser capture microdissected cells. Cells were microdissected from human peripheral white blood cell cytopins, and DNA was extracted using 10 µL of PicoPure DNA Extraction Solution. The extracts were analyzed directly in 35-cycle PCRs using primers for three single-copy genes. Lane M: DNA marker (Sigma); lanes 1–5: 536 bp human β-globin gene fragment; lanes 6–10: 245 bp cystic fibrosis gene fragment (CFTR); lanes 11–15: 125 bp human p53 gene fragment; lane 16: no-template negative control PCR.

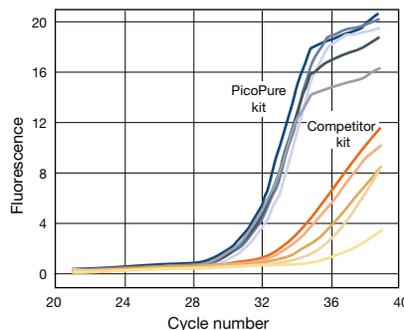


Figure 3. Superior DNA recovery using the PicoPure DNA Extraction Kit. Five 1 ng replicates of DNA were diluted in 10 µL each of PicoPure DNA Extraction Solution. Using another manufacturer's kit, five 1 ng replicates of DNA were column-purified and concentrated to 10 µL. A human β-globin gene fragment was then amplified from the samples by real-time PCR (40 cycles). Threshold cycles were 28.9 ± 0.28 for the PicoPure kit samples, and 32.4 ± 1.35 for the column-purified samples, respectively.

PCR studies illustrate the advantages of the PicoPure kit. Equal amounts of DNA

were transferred to PCR, either directly in the PicoPure kit solution or after purification using a DNA extraction kit from a leading manufacturer. Quantitative real-time PCR (qPCR) demonstrates that the PicoPure kit samples amplify earlier, suggesting more DNA present, and amplify more consistently, indicating less sample variation, than column-purified samples (Figure 3).

The PicoPure kit's reliable high DNA recovery enables increased detection sensitivity, for example, when amplifying single-copy genes from small samples in mutation analysis or genotyping assays. This high DNA recovery makes the kit ideal for small microdissected samples, such as those prepared by LCM (Figure 4).

Extract DNA for any PCR application

DNA extracted with the PicoPure kit is compatible with endpoint PCR performed in the same 0.5 mL tube used for DNA extraction. For gene copy number quantitation, DNA from very small samples can be directly amplified by qPCR without further purification, using platforms such as the Applied Biosystems™ ViiA™ 7 Real-Time PCR System. For highly sensitive mutation and genotype analysis, DNA can be extracted and directly amplified from small samples, and gene fragments can be separated by dHPLC (denaturing high-performance liquid chromatography), using platforms such as the Transgenomic™ WAVE™ System (Figure 5).

Compatible with most tissue and cell preparation procedures

The PicoPure DNA Extraction Kit enables successful recovery of genomic DNA from animal tissue sections and cell samples prepared using a wide range of methods.* Superior results are obtained from formalin-fixed, paraffin-embedded (FFPE) tissue sections, frozen tissue sections, ethanol-fixed cells, and cytological smears (Figure 6).

*Not recommended for use with whole blood, plant, or fungal samples.

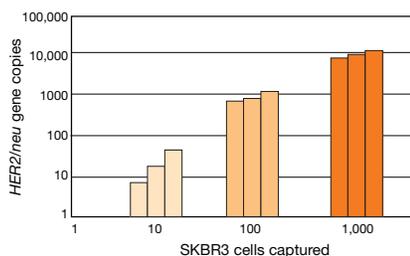


Figure 4. Robust extraction and quantitation of *HER2/neu* gene copy number by real-time PCR. Ten, 100, and 1,000 SKBR3 cells were microdissected from cell smears using LCM. DNA was extracted using 10 μ L of PicoPure DNA Extraction Solution. Without further purification, all 10 μ L were used in a 20 μ L real-time PCR. The number of gene copies per sample was determined and divided by the number of cells per sample to determine the number of gene copies per cell.

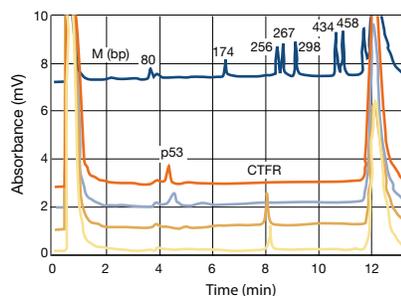


Figure 5. Superior endpoint PCR and amplicon detection using dHPLC. DNA was extracted from 10 peripheral white blood cells per sample using the PicoPure DNA Extraction Kit. The DNA was used, without further purification, in PCR reactions to amplify a 125 bp human p53 gene fragment and a 245 bp human cystic fibrosis gene fragment. PCR products were separated and detected using the WAVE dHPLC System. (Data courtesy of Scott Hamlin and Nicolas Neckelmann, Transgenomic, Inc., San Diego, CA.)

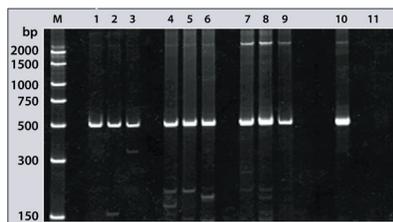


Figure 6. Robust PicoPure DNA extraction and β -globin gene amplification. LCM was used to collect samples. DNA was extracted using the PicoPure DNA Extraction Kit; a single-copy 536 bp human β -globin gene fragment was amplified from each sample using standard protocols, and the products were electrophoresed on a 10% polyacrylamide/TBE gel and stained with Invitrogen™ SYBR™ Gold Nucleic Acid Stain. M: DNA marker; lanes 1–3: ethanol-fixed SKBR3 cells; lanes 4–6: FFPE breast tissue; lanes 7–9: frozen, ethanol-fixed foreskin tissue; lane 10: positive PCR control, 1 ng human genomic DNA template; lane 11: negative control, no-PCR template.

Ordering information

Product	Quantity	Cat. No.
PicoPure DNA Extraction Kit	1,500 μ L buffer (150 CapSure HS/30 CapSure Macro LCM Cap extractions)	KIT0103
PicoPure RNA Isolation Kit	Enough for 40 RNA isolations	KIT0204
CapSure Macro LCM Caps	48 Macro caps	LCM0211
CapSure HS LCM Caps	32 HS Caps	LCM0213

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