



GENOMIC DNA FROM BLOOD & CELL CULTURE

Principle steps in the Nucleon[®] BACC protocol

Cell lysis

Deproteinisation with Sodium
Perchlorate

Extraction with Chloroform
and Nucleon Resin

DNA Recovery

DNA Washing

- High speed (≤ 30 minutes)
- High yield (370-440 μ g/10ml blood)
- High purity ($A_{260/280} \geq 1.8$)
- High MWt DNA (>50 kb)
- Economical large volume sample extraction
- Fully scalable (1.5ml to 10ml)

Introduction

The Nucleon Blood and Cell Culture (BACC) DNA extraction system has been developed for the rapid and efficient extraction of high molecular weight DNA from whole blood and cultured cells.

Principle

Following cell lysis, deproteinisation with sodium perchlorate and a single partition against chloroform, the Nucleon proprietary resin is added. This resin covalently binds proteins (Figure 1) and subsequently forms a semi-solid stratum during partitioning (Figure 2), which traps proteinaceous material at the interface and in the organic phase.

This facilitates removal of the aqueous phase, ensuring excellent recovery of high quality DNA (Table 1).

The Nucleon BACC DNA extraction system is not based on spin columns or magnetic beads. As a result, scaling up to large sample volumes is both simple and cost effective.

Applications

DNA recovered by the Nucleon DNA extraction system is suitable for most downstream applications such as restriction digests (Figure 3), PCR[†] (Figure 4), blotting and hybridisation.



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Figure 1 Mechanism of Nucleon Resin protein binding

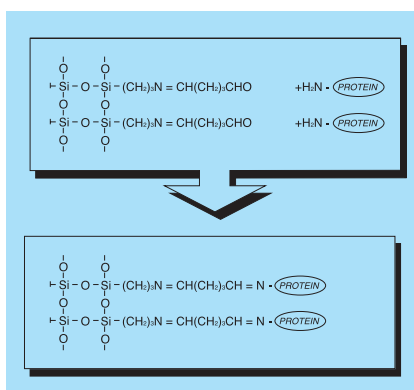


Figure 2 Formation of semi-solid stratum after adding Nucleon Resin and chloroform

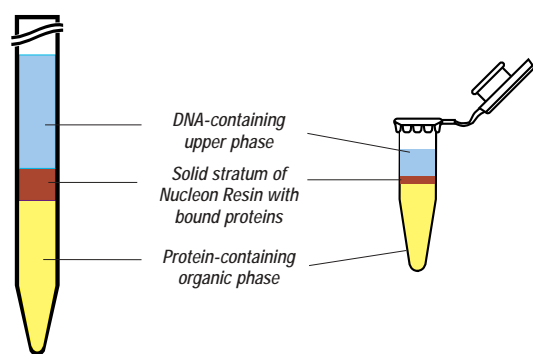
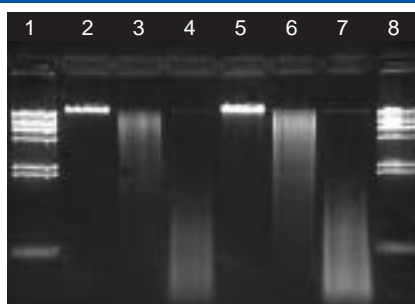
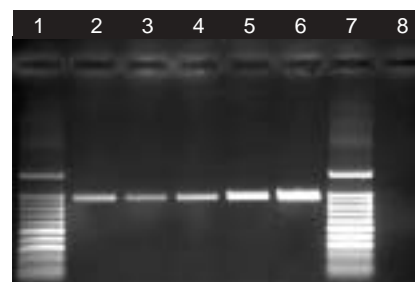


Figure 3 Genomic DNA isolation & restriction enzyme digests



- 1) *Hind*III λ digest marker
- 2) undigested blood DNA
- 3) blood DNA digested with *Hind*III
- 4) blood DNA digested with *Alu*I
- 5) undigested cell DNA
- 6) cell DNA digested with *Hind*III
- 7) cell DNA digested with *Alu*I
- 8) *Hind*III λ digest marker

Figure 4 PCR amplification



- 1) 100bp ladder
- 2) blood DNA (prep 1)
- 3) blood DNA (prep 2)
- 4) HeLa cell DNA (prep 1)
- 5) HeLa cell DNA (prep 2)
- 6) positive control (human placenta DNA)
- 7) 100bp ladder
- 8) negative control

Table 1 Yields and purity of recovered DNA

Sample	Yield of DNA (μ g)	Average A _{260/280}	Size Range (Kb)
10ml whole blood	370 - 440	1.8-2.1	23-200
10 ⁶ HeLa cells	12 (average)	1.8 (average)	46-224

Ordering Information

SL8501 Nucleon BACC1 kit for 50 extractions of up to 1ml whole blood or cell cultures

SL8502 Nucleon BACC2 kit for 50 extractions of between 3 to 10ml of whole blood or cell cultures

SL8512 Nucleon BACC3 kit for 50 extractions of up to 10ml of whole blood or cell cultures

Other kits available in the Nucleon range:

SL8508 Nucleon ST kit for 50 preps of up to 250mg of soft tissue

SL8509 Nucleon HT kit for 50 preps of up to 25mg of hard tissue or paraffin-embedded sections

SL8510 Nucleon PhytoPure[®] kit for 50 extractions of 0.1g of plant tissue

SL8511 Nucleon PhytoPure kit for 50 extractions of 1.0g of plant tissue

44100 Nucleon Genomic DNA Extraction kit for 50 preps of 10ml whole blood

44200 Nucleon Genomic DNA Extraction kit for 50 preps of 1cm mouse tail

44201 Nucleon Genomic DNA Extraction kit for 200 preps of 1cm mouse tail

44300 Nucleon Genomic DNA Extraction kit for 50 extractions of 0.1g of plant tissue

Other kits available in the Nucleopure™ range for use with the Nucleopure Automated System for mouse tail DNA extraction:

35100 Nucleopure Mouse Tail kit for up to 960 extractions

Other kits available in the Nucleoplex™ range for use with the Nucleoplex Automated System for BAC/Plasmid DNA extraction:

33100 Nucleoplex Plasmid DNA extraction kit for up to 192 extractions

33200 Nucleoplex BAC DNA extraction kit for up to 192 extractions

33201 Nucleoplex BAC DNA extraction kit for up to 192 extractions (plasticware not included)



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