DNA & RNA preparation Versatile Tools for Nucleic Acid Purification

Purification or isolation of nucleic acids is the first step in most molecular biology studies and all recombinant DNA Techniques.

As a plethora of methods exists for extraction and purification of nucleic acid, researchers usually choose the technique most suited to their:

Target nucleic acid (ssDNA, dsDNA, total RNA, mRNA, etc).

Extraction methods

The extraction of nucleic acids from biological material requires cell lysis, inactivation of cellular nucleases, and separation of the desired nucleic acid from cellular debris. Often, the ideal lysis procedure is a compromise. It must be rigorous enough to fragment the complex starting material (e.g., blood, tissue), yet gentle enough to preserve the target nucleic acid. Common lysis procedures include:

- Mechanical disruption (for example, grinding, hypotonic lysis).
- Chemical treatment (for example, detergent lysis, chaotropic agents, thiol reduction).
- Enzymatic digestion (for example, proteases).

Cell membrane disruption and inactivation of intracellular nucleases may be combined. For instance, a single solution may contain detergents to solubilize cell membranes and strong chao tropic salts to inactivate intracellular enzymes After cell lysis and nuclease inactivation, cellular debris may easily be removed by filtration or precipitation.

Purification methods

Methods for purifying nucleic acids from cell extracts are often combinations of extraction/precipitation, centrifugation, filteration, and affinity separation.

Product Overview
Detailed Product Characteristics

Purification method Product	Starting material and quantity	Yield/recovery	Time required
	Silica Adsorption		
KiaSpin PCR Template Preparation Kit	blood, 200 - 300 µl cultured cells, 10^4 - 10^8 mouse tail, 25 - 50 mg yeast, 10^8 cells bacteria, 10^9 cells	3 - 9 µg 15 - 20 µg 5 - 1 0 µg 10-13 µg 1 - 3 µg	20 min 20 min 200 min, incl. lysis, 50 min, incl. lyticase digest 35 min, incl. lysozyme digest
KiaSpin PCR Product Purification Kit	PCR, modifying, labeling, restriction digestion reaction, agarose gel slices	>80% recovery of 5 - 25 µg DNA	10 min
KiaSpin Plasmid Isolation Kit	E. coli XL 1 blue, pUC 19 (2 ml) E. coli HB 101, pUC 19 (2 ml) E. coli DH5α, pUC 19 (2 ml)	12 µg 6 µg 3.5 µg	30 min 30 min 30 min
KiaSpin Viral Nucleic Acid Kit	serum, plasma, urine, supernatant from cell culture, 200 - 600 µl	product detectable by PCR or RT-PCR	20 min
KiaSpin Agarose Gel Extraction Kit	agarose gel slices, 100-200 mg	80% recovery of fragments (0.2-9.5 kb)	60 min