Many methods are available to extract and purify nucleic acids, depending on:

- starting material: this include complex biological samples (tissues, cells, bacteria, virus...) and in vitro preparations (amplifications reactions, affinity chromatography fractions...)
- desired nucleic material: DNA, cDNA, plasmids, RNA, mRNA,...
- the goal: to isolate, concentrate or desalt nucleic material. The purity and quality of DNA/RNA, usually estimated with on OD260/280 measurement, should suit downstream applications, including analysis, PCR amplifications, diagnostics or therapeutics.

Interbiotech offers basic chemical reagents for extraction of nucleic acids, as well as kits, based mainly on silica matrix or ionic exchange, that make easier process of specific applications including difficult samples or demanding genetic techniques as DNA amplification, RT-PCR, or transfections.

See also:
- Desalting/dialysis, electroelution
- DNA/RNA labelling

## DNA Preparation - Cells & Tissue

**BDtract™ Genomic DNA Isolation Kit**

Purify DNA, free of RNA, proteins, and degrading enzymes

**Sample Source:** Whole blood, Cultured cells, Tissue, Bacteria, PCR Product

**Sample Size:**
- Cells grown in suspension: 5-10 x 10^6 cells
- Cells grown in monolayer: 100 mm culture dish
- Tissue: 50-100 mg
- Bacteria: 1-5 ml
- Blood: 2.5 ml

**Preparation Time:** Approximately one hour

- Economical, Fast, and Simple
- High DNA Yield: 30-40 µg/mL blood
- Ultra Purity: A260/A280 ratio of 1.8-1.9
- Low contamination: No RNA, Protein, or degrading enzyme contamination
- Non-toxic: No phenol, chloroform, or other toxic extractions
- Stable: Reagents stored at room temperature

Genomic DNA Isolation Kit provides all the necessary reagents and protocols for quickly extracting high-molecular-weight DNA from whole blood, cultured cells, tissue, and bacteria. This kit precludes the need for phenol, chloroform or other organic extraction. RNA is removed by trea™ent with DNase-free RNases. Proteins are further removed by salt precipitation. Genomic DNA isolation is achieved through alcohol precipitation and then dissolved in TE buffer. The purified DNA is free of RNA, proteins, and degrading enzymes, and may be used directly for RFLP, restriction digests, cloning, Southern blotting, PCR amplification, and other DNA analysis techniques.

### Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat.#</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDtract™ Genomic DNA Isolation Kit</td>
<td>T66251</td>
<td>50 tests</td>
</tr>
<tr>
<td>BDtract™ Genomic DNA Isolation Kit</td>
<td>T66250</td>
<td>100 tests</td>
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</table>
TissueDirect Multiplex PCR System
Sample Source: Animal (such as mouse) tails, tissues (fresh, frozen, or paraffin), microdissection, buccal cells, hair shaft, saliva, sperm, and cells.

- Sample Size: Tissue: 5 mg
- Saliva: 15 µl
- Cells culture: 15 µl

- Easy to perform: very simple and rapid procedure to extract genomic DNA in 12 min.
- High specificity: highly specific amplification of genomic DNA using "HotStart" Script™ DNA polymerase
- Multiplex PCR: up to >1,000 DNA sequences can be amplified using multiplex PCR primers.
- Super sensitivity: genomic DNA from a single sperm has been successfully used in multiplex PCR amplification of more than 1000 amplicons and subsequent DNA genotyping assays. The super sensitivity of this kit will dramatically cut down the tissue utility to save your precious tissue samples. This kit will also allow you to use less invasive method for genomic DNA preparation needed for genotyping.

TissueDirect™ Multiplex PCR System is a powerful reagent kit for both easy and rapid genomic DNA preparation and multiplex PCR amplification. Genomic DNA is directly released from cells (tissues, mouse tails, hair shafts, cell culture) using proprietary reagents in 12 minutes without DNA isolation. The genomic DNA can be used immediately in PCR amplification of multiple gene targets (up to >1,000) or stored at +4 °C for future use.

For applications such as:
- SNP genotyping and mutation detection
- Target detection in transgenic mice
- DNA sequencing and cloning
- Quantitative PCR

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<td>100 Preps</td>
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<td>TD-A Buffer, TD-B Buffer, TD-C, TD-D Buffer, PCR-grade water</td>
<td>BM6200</td>
<td>100 Preps</td>
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DNA Preparation - Blood

Blood DNA Sample Preparation Column Kit
DNA directly from blood to PCR

Sample Source: Fresh or frozen whole blood
Sample Size: 500 µl
Elution Volume: 2 x 100 µl

The Blood DNA Sample Preparation Column Kit offers a quick and easy way to isolate DNA from whole blood samples using isolation methods based on binding nucleic acid to column membrane. The purified DNA can be used directly for PCR amplification. The following example is demonstrated by PCR amplification with allelic specific primers and column isolated blood DNA samples.

<table>
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<tr>
<td>Blood DNA Sample Preparation Column Kit</td>
<td>T66310</td>
<td>100 tests</td>
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</tbody>
</table>

Kit Components: Spin Columns, BD-1 Solution, Lysis Solution, Wash Buffer, Elution Solution

e-mail interbiotech@interchim.com  ◆  Visit our website: www.interchim.com
Nucleic acid preparation
DNA preparation

IsoQuick™ Nucleic acid extraction kit
The shortest way from blood to PCR

Sample Source: recommande for whole blood, but can work on other samples
Sample Size: 100 µl

The IsoQuick™ nucleic acid extraction kit is intended for use in the extraction and purification of nucleic acid from a variety of complex biological materials, such as whole blood, bacteria or culture cells. This kit uses a simple and highly effective phase separation technique. Based on guanidine thiocyanate, it provides the researcher with DNA and/or RNA of purify and yield comparable with phenol/chloroform method, but without the use of hazardous chemicals. The three step process gives the researcher PCR or enzyme digestion ready DNA in 20 mn (or RNA in 40 mn). This kit requires no special storage.

<table>
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<tr>
<th>Description</th>
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<tr>
<td>IsoQuick™ Nucleic acid extraction kit</td>
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</table>

MonoFas mini DNA Blood Kit
Extraction of genome DNA from 2 µl of whole blood

Sample: For 2 – 10 µl of whole blood
Applications: PCR amplification, restriction enzyme digestion, virus, bacteria/fungal analysis, cancer research, human genetic tests, forensic medicine tests.

- Fast extraction and purification in 10 minutes
- Clean and high recovery: A260/280 > 1.7
- Elution buffer is sodium free
- Elution by only 2 µl is possible
- High purity eluent can be applied directly for efficient PCR amplification.

This kit is designed for the purpose of DNA purification from valuable or trace amounts of blood, biological fluids and blood stains.

Adaptive analytes are such as fresh and frozen whole blood (anticoagulant), buffy coat, bone marrow fluid, lymphocytes, leucocytes, biological fluids.

Monolith Silica
specification:
Through pore diameter: 15 µm
Meso-pore: 10 nm

Fluorescent sequencing can be used:
Sample: DNA to make it amplify from human genome by using Takara PCR Kit.
Sequence data analyzed with ABI Prism 3730 Genetic Analyzer

<table>
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<tr>
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<td>MonoFas mini DNA Blood Kit</td>
<td>BN3310</td>
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<td></td>
<td>BN3311</td>
<td>100 tests</td>
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</tbody>
</table>

Kit Components: Lysis Solution, Extraction Matrix, 20X Dye Concentrate, Extraction Buffer, Sodium Acetate, RNase-free Water, Sample Buffer

Tel 33 (0)4 70 03 88 55             Hot line 33 (0)4 70 03 73 06             Fax 33 (0)4 70 03 82 60
**DNA extractor kit**
Detects and quantitates contaminant DNA in serum and residual DNA in biopharmaceuticals

- Avoid toxic organic solvents
- High quality and high recovery from biologicals fluids

Sample Source: human serum  
Sample Size: 100 µl (50 reactions), 200 µl (25-30 reactions)

In the detection and measurement of DNA in fluids, DNA must be isolated from the proteins in the sample.

The "DNA extractor kit" employs a new extraction procedure for DNA purification from human serum in a single tube. This procedure using Sodium Iodide (NaI) as a chaotropic agent realizes DNA isolation of both high quality and high recovery from biologicals fluids without complex and laborious manipulations.

A high concentration of chaotropic reagent, NaI, and an anionic detergent participate in solubilization of the proteins and lipids contained in biological samples. After addition of isopropanol to the mixture, nucleic acids are co-precipitated with polysaccharide glycogen as a carrier, while other components remain soluble in the solution phase.


<table>
<thead>
<tr>
<th>Description</th>
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<td>DNA extractor kit</td>
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**DNA Preparation - Plasmid**

**Plasmid DNA Isolation Column Kit**
From Bacteria to the highest purified DNA for many applications

Sample Source: Bacterial cell culture  
Sample Volume: 1.5 - 5 ml  
Elution Volume: 60 x 100 µl

The Plasmid DNA Isolation Column Kit offers a quick, efficient, and convenient means to extract high quality DNA from bacterial cell culture through purification methods based on binding nucleic acid to column membrane. Extracted DNA can be used directly for a variety of genetic applications without further manipulation.

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<thead>
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<tr>
<td>Plasmid DNA Isolation Column Kit</td>
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**CCL (Complete Cell Lysis Solution)**
CCL is a ready-to-use solution for lysis of bacterial cells and removal of RNA from plasmid DNA mini-preps. CCL, stable at 4°C, can be substituted directly for lysozyme stock solutions in most alkaline lysis and boiling mini-preps. Because there is no weighing out of small fractions of lyophilized powders, no preparation of stock solutions, and no thawing of reagents before use, CCL provides maximum convenience.

RNase A : 10 mg/ml  
Lysozyme : 10 mg/ml  
DNase : None Detected  
Stability (4°C) : > 6 months

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<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Complete Cell Lysis Solution</td>
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</table>

**Related product:**
**Terrific Broth**
Cat.# 821111 500 g
Nucleic acid preparation

PCR and labeled probes clean-up

**PCR Cleanup Column Kit**
Get pure DNA after amplification

Sample Source: PCR Product
Sample Size: 50 µl
Elution Volume: 30 x 50 µl

The PCR Cleanup Column Kit offers a quick, efficient, and convenient means to extract high quality DNA from PCR amplified products through purification methods based on binding nucleic acid to column membrane. Extracted DNA can be used directly for a variety of genetic applications without further manipulation.

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<td>T66370</td>
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**PrestoSpin D – DNA Purification Mini Spin Columns**

- New Technology
- Superior DNA quality
- High yield
- Rapid protocols

This total nucleic acid and DNA purification kit relies on a new nucleic acid binding mechanism. According to this, negatively charged DNA and RNA molecules interact with negatively charged surfaces by a complexing reaction involving multivalent cations such as magnesium. DNA is released as the result of removal of magnesium by EDTA. This reversible binding mechanism is made use for purification of nucleic acids from crude cell extracts. As a binding matrix clay minerals are used, which have an extremely high binding capacity. The new product, named PrestoSpin D, is a kit series consisting of mini spin columns filled with a mixture of pure sand and clay and all reagents needed for cellular lysis and nucleic acid purification. With PrestoSpin D nucleic acids can be extracted and purified from bacteriophages, bacteria, fungi and yeasts, plants, soil, tissues, food/feed, blood and cell cultures. An absolutely new feature of PrestoSpin D is the purification of plasmid DNA in midi format, cosmid and BAC DNA, using mini spin column purification. The PrestoSpin D nucleic acid purification procedures are quick, have low hands-on times and are an economic alternative.

- PrestoSpin D Universal – all-in-one kit: genomic and plasmid DNA
- PrestoSpin D Lambda – Lambda and other phages: yield up to 15 µg (10 ml culture), time: 1 h 10 min.
- PrestoSpin D Bug – Gram-negative and Gram-positive bacteria: yield up to 80 µg (2.10^10 cells = 5 ml, time 35 min.
- PrestoSpin D Fungi – yeasts and fungi: 7 µg (1 ml yeast culture), time 40 min to 1 h 10 min.
- PrestoSpin D Plant – plants and soils: 12.5 µg (100 mg wheat), time 50 min.
- PrestoSpin D Food – animal and plant origin food/feed: 1.9 µg (20 mg flour) to 10 µg (500 mg liver sausage), time: 50 to 90 min.
- PrestoSpin D Tissue – animal and human tissue, mouse tail: up to 60 µg (brain), time 90 - 120 min (complete digestion).
- PrestoSpin D Blood&Cell – Blood and cell culture: 2.7 µg (100 µl blood) – 19.5 µg (10^7 cultured cells).
- PrestoSpin D Plasmid – Plasmid Midi Format: up to 50 µg (high copy), time 45 min. OD260/280 nm: 1.7 – 2.0; Mr genomic DNA: > 50 kb; Plasmid DNA: >99%.

DNA binding by cation complexation. Impurities are washed out and DNA is eluted, without ethanol precipitation, using TE buffer.
## DNA/RNA recovery form electrophoresis gels (electroelution)

Please see ‘GebaFlex’ products in chapter B = Proteomics, that are efficient tools to recover nucleic acids from electrophoresis gels. Great applications are:

- **recovery of large DNA fragments >10kB**
  
  HAND OFF WITH TEDIOUS DNAs
  
  For >10kb DNAs, the bead technology purifications don’t work properly. GebaFlex method offers a superior method to conventional elution that operates by diffusion overnight from agarose pieces. GebaFlex procedure takes only 15 minutes, and nucleic acids can be directly desalted, or purified by beads technology, for any downstream applications. To get i.e. 4 OD of DNA, you need much less (up 2 fold less) starting DNA because yield ranges 80 to 90% (see figure).

### Large DNA fragment Electro Elution method with GeBAflex-tube

- **recovery of small DNA (oligos)**
  
  DON’T GO TO HPLC !
  
  GebaFlex offers an excellent alternative method to HPLC purification of oligonucleotides (cheap, and too time consuming and low yield diffusion elutions. Scale up is easier then with HPLC

  Compared with :

  HPLC purification of oligonucleotides diffusion elutions

  GebaFlex method has following advantages :

  cheaper, no development, scale up is more easy much higher yield, quicker

  GebaFlex offers an excellent alternative method to HPLC purification of oligonucleotides (cheaper, scalable), and to time consuming and low yield diffusion elutions.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat.#</th>
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<td>50 Tests</td>
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<td>U20461</td>
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<td>PrestoSpin D Plasmid high and low copy plasmids - cosmids, BACs</td>
<td>AA2940</td>
<td>25 Tests</td>
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<td>AA2941</td>
<td>100 Tests</td>
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<tr>
<td>PrestoSpin D Plant Plants and soil</td>
<td>AM3250</td>
<td>50 Tests</td>
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<tr>
<td></td>
<td>AM3251</td>
<td>250 Tests</td>
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<tr>
<td>PrestoSpin D Tissue Tissue incl. mouse tail</td>
<td>AM3260</td>
<td>50 Tests</td>
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<td></td>
<td>AM3261</td>
<td>250 Tests</td>
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<tr>
<td>PrestoSpin D Lambda Lambda and other bacteriophages</td>
<td>AM5560</td>
<td>25 Tests</td>
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<td>AM5561</td>
<td>100 Tests</td>
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<tr>
<td>PrestoSpin D Bug Gram-positive/Gram-negative bacteria</td>
<td>AM5570</td>
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<td></td>
<td>AM5571</td>
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<tr>
<td>PrestoSpin D Fungi Yeasts and fungi</td>
<td>AM5590</td>
<td>50 Tests</td>
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<td>AM5591</td>
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<tr>
<td>PrestoSpin D Food Food/feed</td>
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