ahn

DNA Purification

Best Practice Guide

Achieve ultimate DNA purity with AHN Biotechnologie GmbH

Simplified effort, amplified output

Many molecular biology workflows in the 21st century life science laboratory depend on an input of high-quality, meticulously purified DNA samples.

In order to obtain sufficient quantities of DNA for their intended uses, laboratory technicians often have to follow one or more protocols that can easily become complicated and unnerving to inexperienced personnel.

At ahn we believe that DNA extraction and purification should be simple and straightforward. That is why we created **DNA isolation systems** that simplify DNA purification, resulting in excellent quality DNA and stress-free workflows.

ahn informing and enabling good practice

In this **DNA Purification Best Practice Guide** we explore the basics of DNA extraction, plasmid preparation, and DNA quantification.

After studying this short booklet, laboratory personnel will be empowered with knowledge on best practices that increase productivity through optimized purification workflows.

The various **ahn** products included in this guide are designed to speed up and optimize DNA purification, thus freeing up time for laboratory personnel to focus on the more exciting aspects of research such as experimental design and data analysis.

All of the **ahn** products mentioned are available on the **ahn website** or through a local distributor.

Simplified workflow amplified output

Step 1

Lysate creation

The first step of the DNA purification process usually involves the lysis of cells to extract the nucleic acid content.

The best method for cell lysis will depend on a number of factors including the nature of the cells from which the laboratory technician must extract DNA (i.e. bacterial, fungal, plant, animal etc.) and the presence or absence of contaminants.

Achieving the ultimate cell lysis efficiency with ahn Spin Columns

Cells from one organism, e.g. humans, may have different requirements depending on the specific nature of the sample (i.e. stool, biopsy samples etc.). While selecting the optimal cell lysis protocol, it is important to consider downstream applications to which extracted DNA will be applied to ensure success in subsequent experiments.

Cell lysates can be created by several methods that may involve mechanical, chemical, enzymatic and heat disruption of the cell. While most cell lysis methods may be done manually, with some amount of effort from the user, they may also be automated.

Examples of automated approaches include sonication and shaking with ceramic/metallic beads to break down cells and tissues in a less disruptive manner.

The resulting cell lysate would need further processing to separate DNA from the other cellular components. In the case of purifying genomic DNA in eukaryotic cells, lysis protocols may include a nuclear lysis step.

ahn myPlate sc

Spin Column System

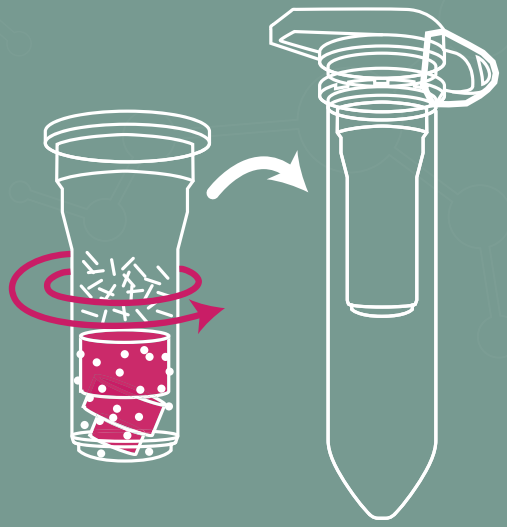
Filter Options	SC	FP
Glass fibre (GF) filter characteristics - recommended for the purification of DNA and RNA / prefiltering of dirty solutions / rapid flow rate and high particle loading capacity	■	■
Polyethylene (PE) filter characteristics - suitable for particle-removing coarse filtration / can be used both as a prefilter or as support filter in combination with other filters / hydrophobic / very good chemical resistance	■	■

Further filter options include Nylon, Cellulose Acetate, Regenerated Cellulose and Polyvinylidene Fluoride.

Description - Spin Column System	Cat. No.
myTube® SC **0.8 mL** filter tube, **GF-F2 filter, 2.0 mL** receiver tube	3-320-20-0
myTube® SC **0.8 mL** filter tube, **GF-N2 filter, 2.0 mL** receiver tube	3-321-20-0
myTube® SC **0.8 mL** filter tube, **PE 20-60 µm filter, 2.0 mL** receiver tube	3-340-10-0

Description - individual components Spin Column System	Cat. No.
myTube® SC **0.8 mL** filter tube w/o filter, w/filter ring	3-331-50-0
myTube® RT **2.0 mL** receiver tube	3-202-80-0


With ahn you stay on top of your science research



Step 2

Lysate clearing and DNA binding

After lysis, it is necessary to run the lysate through a filtration or centrifugation step to separate DNA from cellular debris.

This lysate clearing step minimizes the chances of membranes getting clogged by molecules such as proteins, lipids, and saccharides from the cellular debris.

Bind more DNA with exceptionally tuned ahn microcentrifuges

ahn myTube® 1.5 mL Micro Tubes have a high centrifugal force tolerance that allows the lysate to be spun at the highest rpm setting of the ahn myLab® MC-02 High Speed Microcentrifuge 15000 rpm. In this step, unwanted debris will form a pellet at the bottom of the micro tube, while DNA remains in the supernatant.

After getting a cleared lysate, a DNA binding step then follows. The ahn myTube® SC Spin Column System enables efficient DNA binding. With the aid of ahn pipet4U® Pro single or multichannel pipettes and ahn myTip® filter tips, the supernatant of the cleared lysate is transferred to an ahn myTube® SC Spin Column.

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When the supernatant is spun in a fixed angle rotor with the excellent ahn myLab® MC-02 High Speed Microcentrifuge, DNA remains tightly bound to the filter membrane of the filter tube, while unwanted materials are collected in the receiver tube. The high-quality filter membranes used allow for excellent chemical and mechanical strain resistance. This means that ahn Spin Columns are guaranteed to work well across various DNA extraction and purification protocols.

High-throughput laboratories can exchange ahn myTube® SC Spin Column System for the high-capacity ahn myPlate® FP Microfilterplate system. These plates are constructed from premium grade virgin polystyrene, eliminating the risk of sample contamination. With an 8 x 12 grid, ahn myPlate® FP Microfilterplates enable speedy processing of up to 96 lysate samples per plate.

ahn myTube Micro Tubes

Volume	Height	Colour	Sterilized	Pack Type	Sales Unit	Cat. No.
0.5 mL	31.6 mm	clear	■	bag	5x1000	3-116-C5-0
1.5 mL	40.9 mm	clear		bag	16x500	3-205-80-0
	40.9 mm	clear	■	bag	5x1000	3-207-C5-0
	40.9 mm	clear		bag	16x500	3-205-80-7
2.0 mL	41.7 mm	clear		bag	16x500	3-204-80-0
	41.7 mm	clear	■	bag	5x1000	3-208-C5-0


Helping you make an impact through science

Retain up to 99.99% of your DNA with ahn Spin Columns and Microplates

Step 3

DNA washing and nucleic acid purification

After successful lysate clearing and DNA binding, the nucleic acid content usually undergoes one or more wash steps that remove any unwanted molecules (e.g. proteins) that may persist in the sample.

Ethanol-based wash buffers are frequently used in this wash step to remove the impurities from the bound DNA. The DNA remains anchored to the filter membranes through a selective binding process in the presence of chaotropic salts in the wash solution.

Both ahn myTube® SC Spin Columns and ahn myPlate® FP Microfilterplates have some noteworthy features that increase the efficiency DNA washing.

The various filter options are optimized for DNA yields of approximately 99.99%, minimizing the loss of nucleic acids.

The premium-grade polypropylene used in manufacturing both products also ensures minimal chemical interaction with the wash buffers for excellent results every time.

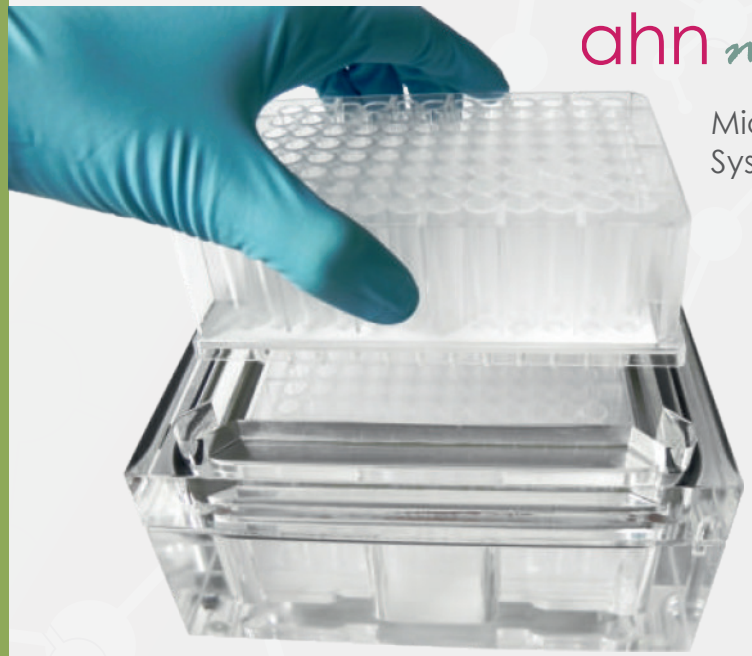
ahn *myPlate* SC

Spin Column System

One filter tube size (0.8 mL) compatible with both 1.5 mL and 2.0 mL receiver tubes

High filtration efficiency Spin Columns

Premium-grade polypropylene construction minimizes chemical interactions with reactants

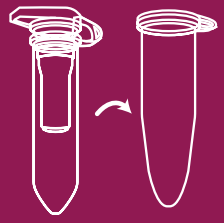


ahn *myPlate* FP

Microfilterplate System

Empowering the next generation of life science technicians

Faster elution of excellent quality DNA every time



Step 4

Elution

Elution, the removal of the bound DNA from the filter membrane, is the final step of DNA purification.

By exploiting the reversible binding of DNA to filters in ahn myTube® SC Spin Columns and ahn myPlate® FP Microfilterplates, elution is a quick and effortless process.

By leveraging ahn's excellent products, lab technicians can achieve remarkable DNA quality every single time. DNA is released from filter membranes using nuclease-free water or commercially available elution buffers and spinning the samples in the ahn myLab® MC-02 High Speed Microcentrifuge 15000 rpm.

The high-quality, purified DNA that is collected in receiver tubes of ahn myTube® SC Spin Columns or in ahn myPlate® RP receiver plates is ready for use in downstream processes. These may include sequencing and transfection reactions, in-vitro transcription and translation systems, among others.

ahn myLab MC-02

High Speed Microcentrifuge 15000 rpm

Description	Cat. No.
AHN myLab® MC-02 Microcentrifuge 15000 rpm	7-001-01-0

Specifications	
Maximum Volume	12x2 mL (Micro Tubes)
Speed Setting	500 to 15.000 RPM
Maximum RCF	15596 x g
Speed Accuracy	± 100 rpm
Run Time	1 to 99 minutes & infinite mode
Acceleration time	60 ± 2 seconds
Deceleration time	50 ± 2 seconds
(Size (LxWxH	190x120x270mm
Weight	2.450 kg approx (with rotor)
Power Consumption	55 W


Achieve more in science with ahn

Intuitive workflow, mindblowing results

ahn

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