

# **Circulating DNA from plasma**

## **User manual**




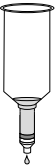

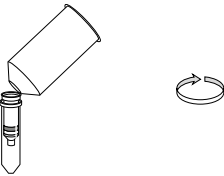

NucleoSnap DNA Plasma

May 2016 / Rev. 01

# Circulating DNA from plasma

## Protocol-at-a-glance (Rev.01)

### NucleoSnap DNA Plasma

<b>1 Prepare sample</b>		4,500 x <i>g</i> , 10 min
<b>2 Lyse sample</b>		45 µL Proteinase K 3 mL plasma Mix RT, 5 min 3 mL VL Mix 56 °C, 5 min
<b>3 Prepare Binding conditions</b>		3 mL ethanol (96–100%) Mix
<b>4 Bind DNA</b>	 Vacuum	500 µL CC 0.4–0.6 bar*, 30 s Load lysate 0.4 bar*, 5–15 min
<b>5 Wash silica membrane</b>	 Vacuum	1 mL VW1 0.2–0.4 bar*, 1 min 500 µL WB 0.2–0.4 bar*, 30 s
<b>6 Dry silica membrane</b>		Remove upper part and discard 11,000–20,000 x <i>g</i> , 3 min
<b>7 Elute DNA</b>		50 µL Elution Buffer RT, 3 min 11,000 x <i>g</i> , 1 min

\* Reduction of atmospheric pressure

## Table of contents

1	Components	4
1.1	Kit contents	4
1.2	Reagents, consumables, and equipment to be supplied by user	5
1.3	About this user manual	5
2	Kit specifications	6
3	Product description	7
3.1	The basic principle	7
3.2	Size and yield of DNA from plasma	7
3.3	Handling of sample material	7
3.4	Elution procedures	8
3.5	Stability of isolated DNA	8
4	Storage conditions and preparation of working solutions	8
6	Protocols for the isolation of cell-free DNA from plasma	12
6.1	Protocol for the isolation of DNA from 1–5 mL EDTA plasma	12
6.2	Protocol for the isolation of DNA from 6–10 mL EDTA plasma	16
6.3	Protocol for the isolation of DNA from 1–5 mL plasma from Cell-Free DNA BCT <sup>®</sup> (Streck, Inc.)	16
7	Appendix	17
7.1	Troubleshooting	17
7.2	Ordering information	18
7.3	Product use restriction / warranty	18

# 1 Components

## 1.1 Kit contents

<b>NucleoSnap DNA Plasma</b>		
<b>REF</b>	<b>10 preps 740300.10</b>	<b>50 preps 740300.50</b>
Column Conditioner CC	13 mL	30 mL
Lysis Buffer VL	60 mL	275 mL
Wash Buffer VW1	13 mL	75 mL
Wash Buffer WB	10 mL	50 mL
Elution Buffer*	13 mL	13 mL
Liquid Proteinase K	800 µL	4 mL
NucleoSnap DNA Plasma Columns	10	50
Collection Tubes (2 mL)	10	50
Collection Tubes (1.5 mL)	10	50
NucleoVac Mini Adapter	10	50
User manual	1	1

\* Composition of Elution Buffer: 5 mM Tris/HCL, pH 8.5

## 1.2 Reagents, consumables, and equipment to be supplied by user

### Reagents:

- 96–100 % ethanol

### Consumables:

- 50 mL tubes for plasma lysis
- Disposable pipette tips

### Equipment:

- Vacuum manifold
- Centrifuge for microcentrifuge tubes
- Stopcocks (recommended)
- Heating-block or water bath for 56 °C incubation of 50 mL tubes
- Manual pipettors
- Vortex mixer
- Personal protection equipment (lab coat, gloves, goggles)

## 1.3 About this user manual

It is strongly recommended for first time users to read the detailed protocol sections of the **NucleoSnap DNA Plasma** kit before using this product. Experienced users, however, may refer to the Protocol-at-a-glance instead. The Protocol-at-a-glance is designed to be used only as a supplemental tool for quick referencing while performing the purification procedure.

All technical literature is available online at [www.mn-net.com](http://www.mn-net.com).

## 2 Kit specifications

- The **NucleoSnap DNA Plasma** kit is recommended for the isolation of circulating cell-free DNA from human EDTA plasma.
- The **NucleoSnap DNA Plasma** kit is designed for high recovery of fragmented DNA  $\geq 50$  bp.
- Up to 5 mL plasma can be used as sample material with a single column loading step.
- DNA yield strongly depends on the individual sample, but is typically in the range of 0.1 to 100 ng DNA per mL plasma.
- Elution can be performed with as little as 20–50  $\mu$ L elution buffer. DNA is ready to use for downstream applications like real-time PCR or others.
- The preparation time is approximately 50 min for 6 plasma samples.

**Table 1: Kit specifications at a glance**

Parameter	NucleoSnap DNA Plasma
Technology	Silica-membrane technology
Format	NucleoSnap Column
Sample material	Human EDTA/Cell-Free DNA BCT <sup>®</sup> plasma
Sample amount	1–5 mL per preparation
Typical yield	Sample dependent
Elution volume	20–50 $\mu$ L
Preparation time	50 min/6 preps

## 3 Product description

### 3.1 The basic principle

The **NucleoSnap DNA Plasma** kit is designed for the efficient isolation of circulating DNA from human blood plasma. Fragmented DNA as small as 50–1000 bp can be purified with high efficiency. Due to a special snap-off design, the **NucleoSnap DNA Plasma Columns** allow processing of up to 5 mL plasma along with very small elution volumes (20–50  $\mu$ L), resulting in highly concentrated DNA.

The protocol follows state-of-the-art bind-wash-elute procedures: After mixing a plasma sample with Liquid Proteinase K and binding buffer, the mixture is applied to the **NucleoSnap DNA Plasma Column**. Upon loading of the mixture onto the column and applying the vacuum, DNA binds to the silica membrane.

Two washing steps efficiently remove contaminating substances, such as PCR inhibitors. Subsequently, the upper part of the snap-off column is removed, and highly pure DNA is finally eluted with 20–50  $\mu$ L of a slightly alkaline elution buffer of low ionic strength (5 mM Tris/HCl, pH 8.5) from the lower part of the snap-off column.

### 3.2 Size and yield of DNA from plasma

Usually, DNA concentrations in plasma are in a range of 0.1 ng DNA per mL of plasma to several 100 ng DNA per mL of plasma. The amount of circulating DNA in plasma depends on the health condition of the donor, sampling and handling of the blood, plasma preparation, DNA isolation method, etc.

A significant portion of the cell-free DNA in plasma originates from apoptotic cells. Therefore, a considerable percentage of this circulating DNA is known to be highly fragmented. However, the degree of fragmentation and the ratio of fragmented DNA to high molecular weight DNA depends on several parameters like origin of the DNA (e.g., fetal, tumor, microbial DNA), health condition of the blood donor, blood sampling procedure, and handling of the sample.

The **NucleoSnap DNA Plasma** purification system is designed for the efficient isolation of highly fragmented DNA in a range of 50–1000 bp. Within this range, both small and large fragments are recovered with high efficiency.

### 3.3 Handling of sample material

Circulating DNA yield and quality is highly influenced by blood sampling, handling, storage, and plasma preparation. It is highly recommended to perform these steps as uniformly as possible in order to achieve highest reproducibility.

Plasma can be isolated according to the following recommendation:

#### **Preparation of plasma from human EDTA blood**

- 1 Centrifuge fresh blood sample for 10 min at 2,000 x g.
- 2 Transfer the plasma without disturbing sedimented cells and particles into a fresh tube.

**3** Freeze plasma at -20 °C for storage until DNA isolation.

**4** Thaw frozen plasma samples prior to DNA isolation and centrifuge for 3 min at  $\geq 11,000 \times g$  in a mini centrifuge for small plasma volumes or 10 min at  $4,500 \times g$  in a tabletop centrifuge for larger volumes of plasma in order to remove residual cells, cell debris, and particulate matter. Use the supernatant for DNA isolation.

#### **Preparation of plasma from Cell-Free DNA BCT<sup>®</sup>**

Please follow the procedures recommended in the Cell-Free DNA BCT<sup>®</sup> user manual.

### **3.4 Elution procedures**

The recommended standard elution volume is 50  $\mu\text{L}$ . A reduction of the elution volume to 20  $\mu\text{L}$  will increase DNA concentration, but the total DNA yield will decrease by this elution procedure. An increase of the elution volume to 100  $\mu\text{L}$  or more will only slightly increase total DNA yield, but reduces DNA concentration.

### **3.5 Stability of isolated DNA**

Due to the low DNA content in plasma, the resulting low total amount of isolated DNA, fragmentation, and the absence of DNase inhibitors (the elution buffer does NOT contain EDTA), the eluates should be kept on ice for short term storage and frozen at -20 °C for long term storage.

## **4 Storage conditions and preparation of working solutions**

**Attention:** *Buffers VL and VW1 contain chaotropic salt! Wear gloves and goggles!*

**CAUTION:** *Buffer VL and VW1 contain guanidinium hydrochloride which can form highly reactive compounds when combined with bleach (sodium hypochlorite). DO NOT add bleach or acidic solutions directly to the sample-preparation waste.*

Storage conditions:

- All kit components can be stored at room temperature (18–25 °C) and are stable for at least one year.
- If there is any precipitate present in the buffers, warm the buffer up to 25–37 °C to dissolve the precipitate before use.



Before starting the **NucleoSnap DNA Plasma** protocol:

- No buffers or enzymes have to be prepared – all kit components are ready to use.
- Set up the vacuum manifold (please follow the instructions provided by the manufacturer).
- **Liquid Proteinase** is ready to use. After first use, store Liquid Proteinase K at 4 °C or -20 °C.






## 5 Safety instructions

The following components of the **NucleoSnap DNA Plasma** contain hazardous contents.

*Wear gloves and goggles and follow the safety instructions given in this section.*

### GHS classification

Only harmful features do not need to be labeled with H and P phrases up to 125 mL or 125 g. *Mindergefährliche Eigenschaften müssen bis 125 mL oder 125 g nicht mit H- und P-Sätzen gekennzeichnet werden.*

Component	Hazard contents	GHS symbol	Hazard phrases	Precaution phrases
<i>Inhalt</i>	<i>Gefahrstoff</i>	<i>GHS-Symbol</i>	<i>H-Sätze</i>	<i>P-Sätze</i>
VL	Guanidine hydrochloride 50–66 % <i>Guanidinhydrochlorid 50–66 %</i>  CAS 50–01–1	  WARNING ACHTUNG	302, 315, 319	264, 280, 301+312, 302+352, 305+351+338, 330, 332+313, 337+313
VW1	Guanidine hydrochloride 36–50 % + 2-propanol 20–50 % <i>Guanidinhydrochlorid 36–50 % + 2-Propanol 20–50 %</i>  CAS 50–01–1	  WARNING ACHTUNG	226, 302, 319, 336	210, 233, 264, 280, 301+312, 305+351+338, 330, 337+313, 370+378, 403+235
WB	Ethanol 55–75 % <i>Ethanol 55–75 %</i>  CAS 64–17–5	  DANGER GEFAHR	225	210, 233, 370+378, 403+235
Liquid Proteinase K	Proteinase K liquid 90–100 % <i>Proteinase K flüssig 90–100 %</i>  CAS 39450–01–6	  WARNING ACHTUNG	317, 334	261, 272, 280, 302+352, 304+340, 333+313, 342+311, 363
Column Conditioner CC	Potassium hydroxide solution 0.50–2.00 % <i>Kaliumhydroxid-Lösung 0,50–2,00 %</i>  CAS 1310–58–3	  WARNING ACHTUNG	226	210, 233, 370+378, 403+235

### Hazard phrases

H225 Highly flammable liquid and vapor.  
*Flüssigkeit und Dampf leicht entzündbar.*

H226 Flammable liquid and vapor.  
*Flüssigkeit und Dampf entzündbar.*

- H302 Harmful if swallowed.  
*Gesundheitsschädlich bei Verschlucken.*
- H315 Causes skin irritation.  
*Verursacht Hautreizungen.*
- H317 May cause an allergic skin reaction.  
*Kann allergische Hautreaktionen verursachen.*
- H319 Causes serious eye irritation.  
*Verursacht schwere Augenreizung.*
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
*Kann bei Einatmen Allergie, asthmaartige Symptome oder Atembeschwerden verursachen.*
- H336 May cause drowsiness or dizziness.  
*Kann Schläfrigkeit und Benommenheit verursachen.*

### Precaution phrases

- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
*Von Hitze, heißen Oberflächen, Funken, offenen Flammen sowie anderen Zündquellenarten fernhalten. Nicht rauchen.*
- P233 Keep container tightly closed.  
*Bei Hautreizung oder -ausschlag:*
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
*Einatmen von Staub/Rauch/Gas/Nebel/Dampf/Aerosol vermeiden.*
- P264 Wash ... thoroughly after handling.  
*Nach Handhabung ... gründlich waschen.*
- P272 Contaminated work clothing should not be allowed out of the workplace.  
*Kontaminierte Arbeitskleidung nicht außerhalb des Arbeitsplatzes tragen.*
- P280 Wear protective gloves/protective clothing/eye protection/face protection.  
*Schutzhandschuhe/Schutzkleidung/Augenschutz/Gesichtsschutz tragen.*
- P301+312 IF SWALLOWED: Call a POISON CENTER/ doctor/.../ if you feel unwell.  
*BEI VERSCHLUCKEN: Bei Unwohlsein GIFTINFORMATIONSZENTRUM/Arzt/... anrufen.*
- P302+352 IF ON SKIN: Wash with plenty of water/...  
*BEI BERÜHRUNG MIT DER HAUT: Mit viel Wasser/... waschen.*
- P304+340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
*BEI EINATMEN: Die Person an die frische Luft bringen und für ungehinderte Atmung sorgen.*
- P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
*BEI KONTAKT MIT DEN AUGEN: Einige Minuten lang behutsam mit Wasser ausspülen. Eventuell vorhandene Kontaktlinsen nach Möglichkeit entfernen. Weiter ausspülen.*
- P330 Rinse mouth.  
*Mund ausspülen.*
- P332+313 If skin irritation occurs: Get medical advice/attention.  
*Bei Hautreizung: Ärztlichen Rat einholen/ärztliche Hilfe hinzuziehen.*
- P333+313 If skin irritation or rash occurs: Get medical advice/attention.  
*Bei Hautreizung oder -ausschlag: Ärztlichen Rat einholen/ärztliche Hilfe hinzuziehen.*
- P337+313 If eye irritation persists: Get medical advice/attention.  
*Bei anhaltender Augenreizung: Ärztlichen Rat einholen/ärztliche Hilfe hinzuziehen.*

P342+311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor/... <i>Bei Symptomen der Atemwege: GIFTINFORMATIONSZENTRUM/Arzt/... anrufen.</i>
P363	Wash contaminated clothing before reuse. <i>Kontaminierte Kleidung vor erneutem Tragen waschen.</i>
P370+378	In case of fire: Use ... to extinguish. <i>Bei Brand: ... zum Löschen verwenden.</i>
P403+235	Store in a well-ventilated place. Keep cool. <i>An einem gut belüfteten Ort aufbewahren. Kühl halten.</i>

## 6 Protocols for the isolation of cell-free DNA from plasma

### 6.1 Protocol for the isolation of DNA from 1–5 mL EDTA plasma

The procedure below describes the isolation of cell-free DNA from 3 mL human EDTA plasma. A range of 1–5 mL plasma can be processed by corresponding adjustment of the Proteinase K, lysis buffer, and ethanol volumes:

Plasma volume [mL]	Proteinase K [ $\mu$ L]	Buffer VL [mL]	Ethanol [mL]
1	15	1	1
2	30	2	2
3	45	3	3
4	60	4	4
5	75	5	5

#### Before starting the preparation:

- Prepare plasma sample according to section 3.3.
- Set water bath or heating block for 50 mL tubes to 56 °C (for lysate incubation).
- Set up vacuum manifold (please follow the instructions provided by the manufacturer).

---

**Protocol for 3 mL**

---

**1 Prepare sample**

Remove residual blood cells: Centrifuge plasma for at least **10 min** at **4,500 x g** in order to remove residual cells and cell debris. Use supernatant, discard sediment.



**4,500 x g,  
10 min**

*Note: Sediment should not be used for further processing. However, the supernatant may still contain suspended matter (e.g., lipids). This floating material does not interfere with further processing.*



---

**2 Lyse sample**

Add **45 µL Proteinase K** to a 50 mL tube. Add **3 mL plasma** to the tube. Carefully **mix** the contents of the tube without moistening the tube lid.

**+ 45 µL  
Proteinase K  
+ 3 mL plasma**

Incubate **5 min** at **room temperature** (18–25 °C). Add **3 mL Buffer VL** to the tube. **Mix** the tube contents by vortexing for approximately 20 s in order to obtain a homogenous lysate.



**Mix  
RT, 5 min  
+ 3 mL VL**

Incubate tube at **56 °C** for **5 min** (e.g., in a water bath).

**Mix  
56 °C, 5 min**

---

**3 Prepare binding conditions**

Carefully open the tube lid and add **3 mL ethanol** (96–100 %).



**+ 3 mL  
ethanol  
(96–100 %)**

**Mix** the tube contents by vortexing for approximately 10 s in order to obtain a homogenous lysate.

**Mix**

#### 4 Bind DNA

Place the NucleoSnap DNA Plasma Column onto a vacuum manifold (do not apply vacuum yet).

*Note: The use of reusable NucleoVac Stop-cocks is recommended (not provided, see ordering information, section 7.2)*

Add **500  $\mu$ L Column Conditioner CC** to the column.

Apply vacuum (**approximately 0.4–0.6 bar\*** differential pressure) until the solution has passed the column (usually several seconds). Release vacuum.

*Note: Perform adding Column Conditioner CC and applying vacuum 1–5 min before adding the lysate to the NucleoSnap Column.*

Apply the **lysate from step 3** to the NucleoSnap Column.

Apply vacuum (**approximately 0.4 bar\*** differential pressure). Wait until the lysate has passed through the column. Approximate duration:

for 3 mL lysate (corresponding to 1 mL plasma): up to 5 min;

for 9 mL lysate (corresponding to 3 mL plasma): up to 10 min;

for 15 mL lysate (corresponding to 5 mL plasma): up to 15 min.

The vacuum can be adjusted to  $\geq 0.6$  bar\* at the end of this step in case the lysate has not yet completely passed the column.

Close stopcocks for each column as soon as the lysate has passed the column!



**+ 500  $\mu$ L CC**

**0.4–0.6 bar\*,  
30 s**

**Load lysate**

**0.4 bar\*,  
5–15 min**

---

\* Reduction of atmospheric pressure

## 5 Wash silica membrane

Add **1 mL Buffer VW1** to the column.  
Apply vacuum (**approximately 0.2–0.4 bar\*** differential pressure) until the wash buffer has completely passed through the column. Approximate duration is up to one minute. Release vacuum.

Add **500 µL Buffer WB** to the column.  
Apply vacuum (**approximately 0.2–0.4 bar\*** differential pressure) until the wash buffer has passed through the column. Approximate duration is 30 s. Release vacuum.



+ 1 mL VW1  
0.2–0.4 bar\*,  
1 min  
+ 500 µL WB  
0.2–0.4 bar\*,  
30 s

## 6 Dry silica membrane

Remove the NucleoSnap Column from the vacuum manifold and insert it into a Collection Tube (2 mL, provided). **Remove the upper part of the column and discard it.**

*Note: Tightly hold the upper part of the column in one hand and the labeled Collection Tube (2 mL) holding the NucleoSnap Column in the other hand and carefully snap off the upper part of the column. Do not label the lower (spin) part of the NucleoSnap Column because the ink might be washed off.*

**Centrifuge** the lower part of the column in the Collection Tube for **3 min** at **full speed** (> 11,000 x g up to 20,000 x g). Discard the Collection Tube with residual flow-through and insert the column into a fresh Collection Tube (1.5 mL, provided).



Remove  
upper part  
and discard  
  
11,000–  
20,000 x g,  
3 min

## 7 Elute DNA

Add **50 µL Elution Buffer** to the column. Incubate **3 min** at **room temperature**. Centrifuge for **1 min** at **11,000 x g**.

Store eluted DNA at 4 °C for short-term and at -20 °C for long-term storage.



50 µL Elution  
Buffer  
RT, 3 min  
11,000 x g,  
1 min

*Note: For alternative elution procedures see section 3.4.*

\* Reduction of atmospheric pressure

## 6.2 Protocol for the isolation of DNA from 6–10 mL EDTA plasma

A range of 6–10 mL plasma can be processed by corresponding adjustment of the Proteinase K, lysis buffer, and ethanol volumes:

Plasma volume [mL]	Proteinase K [ $\mu$ L]	Buffer VL [mL]	Ethanol [mL]
6	90	6	6
7	105	7	7
8	120	8	8
9	135	9	9
10	150	10	10

*Note:* For processing larger volumes than 5 mL, Lysis Buffer VL and Proteinase K have to be purchased separately (see ordering information, section 7.2).

Continue with step 4 of protocol 6.1.

## 6.3 Protocol for the isolation of DNA from 1–5 mL plasma from Cell-Free DNA BCT<sup>®</sup> (Streck, Inc.)

Step 2 (lyse sample) of the standard protocol has to be modified as follows:

Add **45  $\mu$ L Proteinase K** to a 50 mL tube. Add **3 mL plasma** to the tube. Carefully mix the content of the tube without moistening the tube lid. Incubate **15 min at room temperature** (18–25 °C). Add **3 mL Buffer VL** to the tube. **Mix** the tube content by vortexing for approximately 20 s in order to obtain a homogenous lysate.

Incubate tube at **56 °C** for **60 min** (e.g., in a water bath).

Continue with step 3 of protocol 6.1.



## 7 Appendix

### 7.1 Troubleshooting

Problem	Possible cause and suggestions
Low DNA yield	<p><i>Low DNA content of the sample</i></p> <ul style="list-style-type: none"> <li>The content of cell-free DNA in human plasma may vary over several orders of magnitude. DNA contents from approximately 0.1–1000 ng DNA per mL of plasma have been reported (see remarks in section 3.2).</li> </ul>
	<p><i>Inaccurate yield determination</i></p> <ul style="list-style-type: none"> <li>If the DNA concentration is measured with double strand specific dyes, e.g., PicoGreen<sup>®</sup>, make sure not to heat the eluted DNA before measurement. Due to denaturation of DNA during the heat incubation step and the double strand specificity of certain DNA dyes, e.g., PicoGreen<sup>®</sup>, results might be inaccurate.</li> </ul>
Column clogging	<p><i>Sample contains residual cell debris or cells</i></p> <ul style="list-style-type: none"> <li>The plasma sample may have contained residual cells or cell debris. Make sure to use only plasma samples that have been centrifuged in order to remove cells and cell debris (see remarks in section 3.3).</li> </ul>
	<p><i>Silica abrasion from the membrane</i></p> <ul style="list-style-type: none"> <li>Due to the typically low DNA content in plasma and the resulting low total amount of isolated DNA, a DNA quantification via <math>A_{260}</math> absorption measurement is often hampered due to the low sensitivity of the absorption measurement. When performing absorption measurements close to the detection limit of the photometer, the measurement may be influenced by minor amounts of silica abrasion. In order to prevent incorrect <math>A_{260}</math> quantification of small DNA amounts, centrifuge the eluate for 30 s at <math>&gt; 11.000 \times g</math> and take an aliquot for measurement without disturbing any sediment. Alternatively, use a silica abrasion insensitive DNA quantification method (e.g., PicoGreen<sup>®</sup> fluorescent dye).</li> </ul>
Discrepancy between $A_{260}$ quantification values and PCR quantification values	<p><i>Measurement not in the range of photometer detection limit</i></p> <ul style="list-style-type: none"> <li>In order to obtain a significant <math>A_{260}/A_{280}</math> ratio, it is necessary that the initially measured <math>A_{260}</math> and <math>A_{280}</math> values are significantly above the detection limit of the photometer used. An <math>A_{280}</math> value close to the background noise of the photometer will cause unexpected <math>A_{260}/A_{280}</math> ratios.</li> </ul>
Unexpected $A_{260}/A_{280}$ ratio	

## 7.2 Ordering information

Product	REF	Pack of
NucleoSnap DNA Plasma	740300.10 / 50	10 / 50
NucleoVac 24 Vacuum Manifold	740299	1
NucleoVac Mini Adapter	740297.100	100
NucleoVac Stop-cock	740298.24	24
NucleoSpin® Plasma XS	740900.10 / 50 / 250	10 / 50 / 250
Collection Tubes (2 mL)	740600	1000
Lysis Buffer VL	740833.200	200 mL
Liquid Proteinase K	740396	5 mL

Visit [www.mn-net.com](http://www.mn-net.com) for more detailed product information.

## 7.3 Product use restriction / warranty

**NucleoSnap DNA Plasma** kit components are intended, developed, designed, and sold FOR RESEARCH PURPOSES ONLY, except, however, any other function of the product being expressly described in original MACHEREY-NAGEL product leaflets.

MACHEREY-NAGEL products are intended for GENERAL LABORATORY USE ONLY! MACHEREY-NAGEL products are suited for QUALIFIED PERSONNEL ONLY! MACHEREY-NAGEL products shall in any event only be used wearing adequate PROTECTIVE CLOTHING. For detailed information please refer to the respective Material Safety Data Sheet of the product! MACHEREY-NAGEL products shall exclusively be used in an ADEQUATE TEST ENVIRONMENT. MACHEREY-NAGEL does not assume any responsibility for damages due to improper application of our products in other fields of application. Application on the human body is STRICTLY FORBIDDEN. The respective user is liable for any and all damages resulting from such application.

DNA/RNA/PROTEIN purification products of MACHEREY-NAGEL are suitable for *IN VITRO*-USES ONLY!

ONLY MACHEREY-NAGEL products specially labeled as IVD are also suitable for *IN VITRO*-diagnostic use. Please pay attention to the package of the product. *IN VITRO*-diagnostic products are expressly marked as IVD on the packaging.

IF THERE IS NO IVD SIGN, THE PRODUCT SHALL NOT BE SUITABLE FOR *IN VITRO*-DIAGNOSTIC USE!

ALL OTHER PRODUCTS NOT LABELED AS IVD ARE NOT SUITED FOR ANY CLINICAL USE (INCLUDING, BUT NOT LIMITED TO DIAGNOSTIC, THERAPEUTIC AND/OR PROGNOSTIC USE).

No claim or representations is intended for its use to identify any specific organism or for clinical use (included, but not limited to diagnostic, prognostic, therapeutic, or blood banking). It is rather in the responsibility of the user or - in any case of resale of the products - in the responsibility of the reseller to inspect and assure the use of the DNA/RNA/protein purification products of MACHEREY-NAGEL for a well-defined and specific application.

MACHEREY-NAGEL shall only be responsible for the product specifications and the performance range of MN products according to the specifications of in-house quality control, product documentation and marketing material.

This MACHEREY-NAGEL product is shipped with documentation stating specifications and other technical information. MACHEREY-NAGEL warrants to meet the stated specifications. MACHEREY-NAGEL's sole obligation and the customer's sole remedy is limited to replacement of products free of charge in the event products fail to perform as warranted. Supplementary reference is made to the general business terms and conditions of MACHEREY-NAGEL, which are printed on the price list. Please contact us if you wish to get an extra copy.

There is no warranty for and MACHEREY-NAGEL is not liable for damages or defects arising in shipping and handling (transport insurance for customers excluded), or out of accident or improper or abnormal use of this product; defects in products or components not manufactured by MACHEREY-NAGEL, or damages resulting from such non-MACHEREY-NAGEL components or products.

MACHEREY-NAGEL makes no other warranty of any kind whatsoever, and SPECIFICALLY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES OF ANY KIND OR NATURE WHATSOEVER, DIRECTLY OR INDIRECTLY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, AS TO THE SUITABILITY, REPRODUCTIVITY, DURABILITY, FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, CONDITION, OR ANY OTHER MATTER WITH RESPECT TO MACHEREY-NAGEL PRODUCTS.

In no event shall MACHEREY-NAGEL be liable for claims for any other damages, whether direct, indirect, incidental, compensatory, foreseeable, consequential, or special (including but not limited to loss of use, revenue or profit), whether based upon warranty, contract, tort (including negligence) or strict liability arising in connection with the sale or the failure of MACHEREY-NAGEL products to perform in accordance with the stated specifications. This warranty is exclusive and MACHEREY-NAGEL makes no other warranty expressed or implied.

The warranty provided herein and the data, specifications and descriptions of this MACHEREY-NAGEL product appearing in MACHEREY-NAGEL published catalogues and product literature are MACHEREY-NAGEL's sole representations concerning the product and warranty. No other statements or representations, written or oral, by MACHEREY-NAGEL's employees, agent or representatives, except written statements signed by a duly authorized officer of MACHEREY-NAGEL are authorized; they should not be relied upon by the customer and are not a part of the contract of sale or of this warranty.

Product claims are subject to change. Therefore please contact our Technical Service Team for the most up-to-date information on MACHEREY-NAGEL products. You may also contact your local distributor for general scientific information. Applications

mentioned in MACHEREY-NAGEL literature are provided for informational purposes only. MACHEREY-NAGEL does not warrant that all applications have been tested in MACHEREY-NAGEL laboratories using MACHEREY-NAGEL products. MACHEREY-NAGEL does not warrant the correctness of any of those applications.

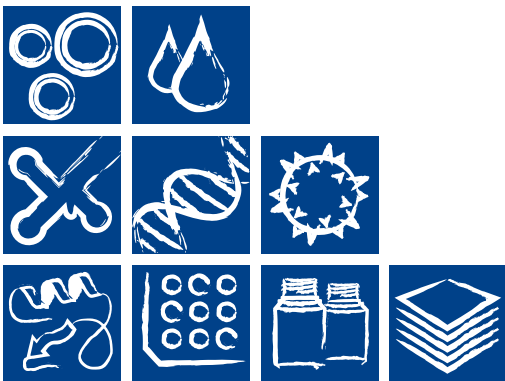
Last updated: 07/2010, Rev. 03

Please contact:  
MACHEREY-NAGEL GmbH & Co. KG  
Tel.: +49 24 21 969-270  
tech-bio@mn-net.com

---

**Trademarks**

PicoGreen is a registered trademark of Molecular Probes, Inc.  
NucleoSpin is a registered trademark of MACHEREY-NAGEL GmbH & Co. KG.  
Cell-Free DNA BCT is a registered trademark of Streck, Inc.



[www.mn-net.com](http://www.mn-net.com)

**MACHEREY-NAGEL**



MACHEREY-NAGEL GmbH & Co. KG · Neumann-Neander-Str. 6-8 · 52355 Düren · Germany

DE / International:

Tel.: +49 24 21 969-0  
Fax: +49 24 21 969-199  
E-mail: [info@mn-net.com](mailto:info@mn-net.com)

CH:

Tel.: +41 62 388 55 00  
Fax: +41 62 388 55 05  
E-mail: [sales-ch@mn-net.com](mailto:sales-ch@mn-net.com)

FR:

Tel.: +33 388 68 22 68  
Fax: +33 388 51 76 88  
E-mail: [sales-fr@mn-net.com](mailto:sales-fr@mn-net.com)

US:

Tel.: +1 484 821 0984  
Fax: +1 484 821 1272  
E-mail: [sales-us@mn-net.com](mailto:sales-us@mn-net.com)



A054042/0560.15