

TECHNICAL HANDBOOK

XNAPS Blood gDNA Flexspin Kit

Catalog Number P1014

For purification of genomic DNA from
flexible amounts of
animal whole blood
buffy coat

Version 2007

Renogen Biolab Inc.
Tel: 1-866-7124412 (Toll free)
Web: www.renogenbio.com
Email: services@renogenbio.com

Table of Contents

All technical literature and related information are available on
the website: www.renogenbio.com

Kit Contents	2
Storage Conditions	2
Quality Control	2
Safety Precautions	3
Technical Assistance	3
Introduction	4
Quick Protocol	5
Detailed Protocols	7
I. Separation of total white blood cells	7
II. Isolation of genomic	8
II.I. From <0.5 ml of starting material	8
II.II. From 1-3 ml of starting material	10
II.III. From 4-6 ml of starting material	12
II.VI. From 7-10 ml of starting material	14
Yield and Purity Examination	18
Supplementary Information	18
Troubleshooting	20
Product Use Limitations	21
Product Warranty	21
Product Selection Guide	22
Ordering Information	24

Renogen Biolab Inc.
#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada
TEL: 1-866-7124412 (Toll free)
WEBSITE: www.renogenbio.com

Kit Contents

Kit Catalog Number	P1014
Kit Size(preps)	100*
10 x RBC Lysis Buffer RL	120 ml
WBC Lysis Buffer LB	60 ml
Denaturation Buffer DB	40 ml
DNA Binding Resin	10 ml
Column Wash Buffer WB	24 ml
RNase A solution	500 µl
Nuclease-free Water	20 ml
Filter Columns	100
Collection Tubes	100
Handbook	1

*: NP1014 contains enough reagents for 100 preps from <0.5 ml, or 40 preps from 1-3 ml, or 24 preps from 4-6 ml, or 12 preps from 7-10 ml of animal blood.

Storage Conditions

RNase A solution should be stored at -20°C. All other buffers and components can be stored at room temperature for one year without any reduction of performance.

Quality Control

In addition to routine monitor and detection for the kit components, the performance of XNAPS blood gDNA flexspin kits are tested on a lot-to-lot basis by purification of genomic DNA from 300 µl of fresh whole blood. The yield

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

and purity of purified genomic DNA is checked by agarose gel electrophoresis, spectrophotometrical analysis and restriction endonuclease digestion.

Safety Precautions

Although no toxic reagents are contained in XNAPS blood gDNA flexspin kit, all chemicals should be considered as potentially hazardous. All due care and attention should be exercised in handling the materials and reagents in the kit. We recommend users always wear laboratory coat, safety glasses, and gloves. In the case of contact with skin or eyes, wash immediately with a large amount of water.

Technical Assistance

We encourage our customers to contact us by any means of telephone, fax, mail/email. Our experienced staff are always ready to assist you about any questions and problems derived from our products. Also, you can find most of the information and data of Renogen products from our website.

Contacting information:

Web: www.renogenbio.com

Tel: 1-866-712-4412(Toll free), 1-651-204-0326

Email: services@renogenbio.com

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

Introduction

XNAPS blood gDNA flexspin kit provides a highly flexible, fast, and efficient method for isolating genomic DNA from up to 10ml of whole blood or equivalent buffy coat. The system combines the rapidity and simplicity of spin column method with the flexibility of batch processing for DNA purification. Removal of red blood cells and plasma firstly not only enables maximum elimination of enzymatic inhibitors, but also increase dramatically the yield of purified DNA. The released free-form DNA after WBC lysis binds specifically with modified resin in aqueous circumstance. After the impurities are washed away, The binding DNA are eluted by pure water. The novel procedure provided by the kit eliminates many disadvantages, such as time-consuming methods, toxic components, low yield, as compared to other commercial kits.

The purified genomic DNA is immediately ready to use in various downstream applications, such as PCR, restriction enzyme digestion, sequencing.

Features:

1. Flexibility: Extract efficiently genomic DNA from 10 μ l to 10ml of whole blood.
2. Rapidity: All the processing steps can be completed within 20 minutes.
3. High yield and purity: Up to 150 μ g of genomic DNA with a ratio of OD₂₆₀/OD₂₈₀ between 1.8-2.0 can be extracted from 3ml of fresh whole blood.
4. Safety for handling, shipping and storage: No phenol extraction, no ethanol precipitation, no toxic chaotropic salt are necessary.
5. The molecular weight of purified genomic DNA is 10-20 kb, suitable for downstream manipulations.

Quick Protocol (For experienced users)

The principle of XNAPS blood gDNA purification system is totally different from the methods of other suppliers. Do not exchange or replace the components of XNAPS blood gDNA flexspin kit with components from any other suppliers.

1. Transfer 300 μ l of whole blood to a 1.5 ml tube. Add 1 ml of buffer RL. Incubate at room temperature for 10 minutes.
2. Centrifuge at maximum speed for 1 minute. Remove completely the supernatant.
3. Wash the pellet with 200 μ l of RL. Discard the supernatant.
4. Resuspend the pellet with 300 μ l of buffer LB by pipetting or vortexing. Incubate at 60°C for 10 minutes.
5. Add 5 μ l of RNase A solution into the tube. Incubate at room temperature for 15 minutes.
6. Add 300 μ l of buffer DB. Mix well by vortexing briefly. Centrifuge at maximum speed for 5 minutes.
7. Transfer the supernatant to a filter column. Add 100 μ l of DNA binding resin. Mix thoroughly by pipetting. Stand at room temperature for 1 minute.
8. Centrifuge at maximum speed for 2 minutes. Discard the flowthrough.
9. Add 600 μ l of buffer WB. Centrifuge at maximum speed for 2 minutes. Discard the flowthrough.
10. Repeat the washing once. Discard the flowthrough.
11. Centrifuge at top speed for 2 minutes.
12. Transfer the spin column to a new 1.5ml tube.
13. Add 200 μ l of nuclease-free water into the spin column. Stand at room temperature for 1 minute.
14. Centrifuge for 1 minute.
15. Store the DNA at -20°C.

Detailed Protocols

The principle of XNAPS blood gDNA purification system is totally different from the methods of other suppliers. Do not exchange or replace the components of XNAPS blood gDNA flexspin kit with components from any other suppliers.

Starting material

XNAPS blood gDNA flexspin kit can be applied to purify genomic DNA from 10 µl to 10ml of anticoagulated whole blood, equivalent buffy coat,. All samples may be either fresh or frozen. Frozen samples should be thawed quickly in a 37°C water bath with mild agitation before beginning the procedure.

Materials to be supplied by the user

Microcentrifuge capable of 14000 x g
 Centrifuge capable of 5000 x g
 60°C water bath or heating block
 Ethanol(>95%)
 Sterile 1.5ml, 2.0 ml microcentrifuge tubes
 Sterile 30 ml, 50 ml centrifuge tubes
 Vortex mixer
 Sterile pipette tips
 (Optional)Proteinase K solution(20mg/ml)

Prior to starting:

1. Add 96 ml of ethanol(>95%) to wash buffer WB.
2. Preheat a water bath or heating block to 60°C
3. Ensure that all solutions are at room temperature prior to use. If precipitates have formed, warm the solutions until the solutions become clear.

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

Tab. 1. Reagent volumes required for flexible amounts of starting material

Blood volume(ml)	<0.5	1-3	4-6	7-10
10X RL (ml)	<1.5	3-9	12-18	21-30
LB (ml)	0.3	0.8	2.0	4.0
DB (ml)	0.3	0.7	1.6	3.2
Resin (µl)	100	200	400	800
WB (ml)	1.2	2.4	5.0	10.0
Filter column	1	2	2	4

I. Separation of total white blood cells

1. Transfer whole blood sample to a sterile centrifuge tube. *The volume of the centrifuge tube should be at least 4 x volumes of the blood sample.*
2. Add 3 x volumes of buffer RL (Tab.1). Mix by inverting 4-5 times. Incubate at room temperature for 10 minutes. If the starting material is less than 300µl, add 0.9 ml of buffer RL directly.
 - 3.1. For microcentrifuge, centrifuge at 13000 x rpm for 1 minute. Carefully remove the supernatant as much as possible, leaving a pellet of white blood cells (*the pellet should be visible at the bottom of the tube*). Invert the tube onto absorbent paper to minimize backflow of supernatant .
 - 3.2. For larger centrifuge, centrifuge the at 3000 x g for 5 minutes. Remove the supernatant as step 3.1.

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

II. Isolation of genomic DNA

Lysate can be processed with white blood cells prepared from above steps, buffy coat (see Supplementary Information), or cultured cells.

II.I. From <0.5ml of starting material

1. Add 300µl of Lysis Solution LB to the tube containing the pellet of white blood cells (see I.), buffy coat, or cultured cells (see Supplementary Information). Resuspend the cells by vortexing or pipetting up and down.
2. (optional) Add 5 µl of Proteinase K solution (20 mg/ml) (provided by user).
3. Incubate the tube at 60°C for 10 minutes.
4. Add 5 µl of RNase A solution into the tube. Incubate at room temperature for 15 minutes.
5. Add 300µl of denaturation solution DB. Close the tube and mix thoroughly by vortexing .
The solution should become cloudy and less viscous. The fluffy white material contains cell debris, proteins and SDS.
6. (optional) Incubate the tube on ice for 5 minutes
- 7.. Centrifuge the cell lysate at maximum speed in a microcentrifuge for 5 minutes. *Clear supernatant should be formed, although a few white precipitants may float on the top.*

8. Insert one filter column into one 2ml collection tube for each sample.
9. Decant gently the clear supernatant from step 7 into the filter column.
10. Add 100 µl of DNA binding resin into the filter column. Mix thoroughly by pipetting up and down. Stand at room temperature for 1 minute.

Note: *Resuspend the resin thoroughly by vortexing or shaking before transferring.*

11. Centrifuge at maximum speed in a microcentrifuge for 2 minutes. Discard the flowthrough from the collection tube. Reinsert the column into collection tube.
12. Add 600 µl of column wash buffer WB. Centrifuge at maximum speed in a microcentrifuge for 2 minutes. Discard the flowthrough.
13. Repeat the washing (step 12) once. Discard the flowthrough from the collection tube. Reinsert the column into the collection tube. Centrifuge at maximum speed for 2 minutes.
14. Transfer the column to a new, sterile 1.5ml microcentrifuge tube. Discard the collection tube.
15. Add 100-200 µl of nuclease-free water into the center of the column. Stand at room temperature for 1 minute. Centrifuge at maximum speed for 1 minute.

While 200 µl elution makes higher yield, 100 µl elution will have higher concentration of DNA.

16. The purified genomic DNA is ready for downstream applications. Or, store the purified DNA at -20°C for later use.

II.II. From 1-3 ml of starting material

1. Add 800 µl of Lysis Solution LB to the tube containing the pellet of white blood cells(see I.), buffy coat, or cultured cells (see Supplementary Information). Resuspend the cells by vortexing or pipetting up and down.
2. (optional) Add 10 µl of Proteinase K solution (20 mg/ml) (provided by user).
3. Incubate the tube at 60°C for 10 minutes.
4. Add 10 µl of RNase A solution into the tube. Incubate at room temperature for 15 minutes.
5. Add 700 µl of denaturation solution DB. Close the tube and mix thoroughly by vortexing .
The solution should become cloudy and less viscous. The fluffy white material contains cell debris, proteins and SDS.
6. (optional) Incubate the tube on ice for 5 minutes
7. Centrifuge the cell lysate at 10000 x g for 5 minutes.
Clear supernatant should be formed, although a few white precipitants may float on the top.

8. Insert one filter column into one 2ml collection tube. Each starting sample needs 2 sets of columns.
9. Transfer the clear supernatant from step 7 into the 2 columns equally (about 700 µl per column).
10. Add 100 µl of DNA binding resin into each column. Mix thoroughly by pipetting up and down. Stand at room temperature for 1 minute.

Note: *Resuspend the resin thoroughly by vortexing or shaking before transferring.*

11. Centrifuge at maximum speed in a microcentrifuge for 2 minutes. Discard the flowthrough from the collection tube. Reinsert the column into collection tube.
12. Add 600 µl of column wash buffer WB. Centrifuge at maximum speed in a microcentrifuge for 2 minutes. Discard the flowthrough.
13. Repeat the washing (step 12) once. Discard the flowthrough from the collection tube. Reinsert the column into the collection tube. Centrifuge at maximum speed for 2 minutes.
14. Transfer the column to a new, sterile 1.5ml microcentrifuge tube. Discard the collection tube.
15. Add 100-200 µl of nuclease-free water into the center of each column. Stand at room temperature for 1 minute. Centrifuge at maximum speed for 1

- minute. *While 200 µl elution makes higher yield, 100 µl elution will have higher concentration of DNA.*
16. Combine the two elutes into one tube. The purified genomic DNA is ready for downstream applications. Or, store the purified DNA at -20°C for later use.

II.III. From 4-6 ml of starting material

1. Add 2 ml of Lysis Solution LB to the tube containing the pellet of white blood cells(see I.), buffy coat, or cultured cells (see Supplementary Information). Resuspend the cells by vortexing or pipetting up and down.
2. (optional) Add 10 µl of Proteinase K solution (20 mg/ml) (provided by user).
3. Incubate the tube at 60°C for 10 minutes.
4. Add 20 µl of RNase A solution into the tube. Incubate at room temperature for 15 minutes.
5. Add 1.6 ml of denaturation solution DB. Close the tube and mix thoroughly by vortexing .
The solution should become cloudy and less viscous. The fluffy white material contains cell debris, proteins and SDS.
6. (optional) Incubate the tube on ice for 5 minutes
7. Centrifuge the cell lysate at 10000 x g for 5 minutes.
Clear supernatant should be formed, although a few white precipitants may float on the top.

8. Transfer carefully the clear supernatant into a sterile centrifuge tube.
9. Add 0.4 ml of DNA binding resin into the supernatant. Mix gently by inverting the tube 4-5 times. Stand at room temperature for 2 minutes.

Note: *Resuspend the resin thoroughly by vortexing or shaking before transferring.*

10. Centrifuge at 6000 x g for 1 minute. Decant the supernatant from the tube.
11. Resuspend the pellet with 2 ml of wash buffer WB by pipetting up and down or vortexing briefly. Centrifuge at 6000 x g for 1 min. Decant the supernatant from the tube.
12. Insert one filter column into one 2ml collection tube. Each starting sample needs 2 sets of columns.
13. Resuspend the resin in 1 ml of WB. Transfer the suspension into the 2 columns equally (about 0.6 ml each).
14. Centrifuge at maximum speed in a microcentrifuge for 2 minutes. Discard the flowthrough from the collection tube.
The resin may pellet against the side of the filter column because of the fixed angle of rotors for most tabletop centrifuges.

15. Add 600 µl of buffer WB to each column. Centrifuge at maximum speed in a microcentrifuge for 2 minutes. Discard the flowthrough.
16. Reinsert the spin column into the collection tube. Centrifuge at maximum speed for 2 minutes.
17. Transfer the column to a new, sterile 1.5ml microcentrifuge tube.
18. Add 100-200 µl of nuclease-free water into the center of each column. The water should be applied to immerse the highest portion of pellet resin. Stand at room temperature for 1 minute. Centrifuge at maximum speed for 1 minute.

Tips: Resuspending the resin with the nuclease-free water by pipetting can increase DNA yield.

While 200 µl elution makes higher yield, 100 µl elution will have higher concentration of DNA.

19. Combine the two elutes into one tube. The purified genomic DNA is ready for downstream applications. Or, store the purified DNA at -20°C for later use.

II.IV. From 7-10 ml of starting material

1. Add 4 ml of Lysis Solution LB to the tube containing the pellet of white blood cells(see I.), buffy coat, or cultured cells (see Supplementary Information). Resuspend the cells by vortexing or pipetting up and down.

2. (optional) Add 20 µl of Proteinase K solution (20 mg/ml) (provided by user).
 3. Incubate the tube at 60°C for 10 minutes.
 4. Add 40 µl of RNase A solution into the tube. Incubate at room temperature for 15 minutes.
 5. Add 3.2 ml of denaturation solution DB. Close the tube and mix thoroughly by vortexing. *The solution should become cloudy and less viscous. The fluffy white material contains cell debris, proteins and SDS.*
 6. (optional) Incubate the tube on ice for 5 minutes
 7. Centrifuge the cell lysate at 10000 x g for 5 minutes. *Clear supernatant should be formed, although a few white precipitants may float on the top.*
 8. Transfer carefully the clear supernatant into a sterile centrifuge tube.
 9. Add 0.8 ml of DNA binding resin into the supernatant. Mix gently by inverting the tube 4-5 times. Stand at room temperature for 2 minutes.
- Note:** Resuspend the resin thoroughly by vortexing or shaking before transferring.
10. Centrifuge at 6000 x g for 1 minute. Decant the supernatant from the tube.
 11. Resuspend the pellet with 4 ml of wash buffer WB by pipetting up and down or vortexing briefly.

- Centrifuge at 6000 x g for 1 min. Decant the supernatant from the tube.
12. Repeat above washing step once.
 13. Insert one filter column into one 2ml collection tube.
Each starting sample needs 4 sets of columns.
 14. Resuspend the resin in 2 ml of WB. Transfer the suspension into the 4 columns equally (about 0.6 ml each).
 15. Centrifuge at maximum speed in a microcentrifuge for 1 minute. Discard the flowthrough from the collection tube. *The resin may pellet against the side of the filter column because of the fixed angle of rotors for most tabletop centrifuges.*
 16. Reinsert the spin column into the collection tube.
Centrifuge at maximum speed for 2 minutes.
 17. Transfer the spin column to a new, sterile 1.5ml microcentrifuge tube.
 18. Add 100-200 µl of nuclease-free water into the center of each column. The water should be applied to immerse the highest portion of pellet resin. Stand at roomtemperature for 1 minute. Centrifuge at maximum speed for 2 minutes.

Tips: *Resuspending the resin with the nuclease-free water by pipetting can increase DNA yield. While 200 µl elution makes higher yield, 100 µl elution will have higher concentration of DNA.*

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

19. Combine the four elutes into one tube. The purified genomic DNA is ready for downstream applications.
Or, store the purified DNA at -20°C for later use.

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

Yield and purity Examination

Both spectrophotometrical analysis and agarose gel electrophoresis are recommended for the yield and purity determination of the purified DNA. To determine the concentration of DNA by spectrophotometer, the following formula should be used :

$$[\text{DNA}] (\mu\text{g/ml}) = A_{260} \times 50 \times D,$$

where D is the dilution factor.

The yield of DNA can be calculated by multiplying the concentration by the volume of DNA solution.

The DNA purified by XNAPS blood gDNA Flexspin Kit should be of high purity with the ratio of OD_{260}/OD_{280} between 1.8-2.0.

Supplementary Information

Storage of blood samples

Whole blood or buffy coat treated with EDTA, citrate, or heparin can be used either fresh or frozen. Yield and purity of the purified DNA depend on storage conditions of the blood. Fresher samples yield better results. Fresh blood samples using EDTA as an anticoagulant can be stored at 2-8°C for 1 week without remarkably decreasing of genomic DNA yield. For long-term storage, collect blood with anticoagulant in tubes, and store at -70 °C.

Buffy Coat Preparation from whole blood

Buffy coat is a concentrated leukocyte suspension which can be prepared from whole blood by centrifugation at low speed. The yield of genomic DNA extracted from buffy coat is 5-10 times higher than from an equivalent volume of whole blood.

1. Spin whole blood in a centrifuge tube at 300 x g for 10 minutes at room temperature with the brake off.

The whole blood in the tube is separated into three different layers after centrifugation: the upper clear layer is plasma; the intermediate layer is buffy coat; and bottom layer contains concentrated erythrocytes.

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

2. Pipet carefully the middle layer (**buffy coat**) into a new tube. It may be helpful to aspirate off the upper plasma before pipetting the buffy coat. Approximately 200µl of buffy coat can be prepared from 1.8ml of whole blood.
3. The buffy coat can be used immediately, or stored at -20°C for later use.

Preparation of cultured cells

1. For suspension cultures, cells are pelleted by centrifugation. Pellets are washed twice with PBS. Cell pellets can be used immediately or frozen for later use.
2. For adherent cultures, cell monolayer is washed twice with PBS. After the second wash, a small volume of PBS is added to the plates (1 ml for each 100-mm plate), and cells are scraped from the plates. The scraped cells are transferred to eppendorf tubes and pelleted by centrifugation.

Enhancement of PCR performance

BSA allows positive amplifications in downstream PCR. Using DNA purified from highly contaminated starting materials as template, adding BSA to PCR mixtures to a final concentration of 0.1-1.0 µg/µl can enhance the downstream PCR performance effectively.

Composition of buffers

TE buffer(pH8.0) 10mM Tris-Cl(pH8.0)
1mM EDTA(pH8.0)

1xPBS(Phosphate Buffered Saline)
8 g NaCl
0.2 g KCl
1.44 g Na2HPO4
0.24 g KH2PO4

in 800 ml of distilled H2O.

Adjust the pH to 7.4 with HCl. Add H₂O to 1 liter. Sterilize by autoclave.

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

Troubleshooting

Problem	Possible Causes	Comments
Incomplete cell lysis	Too many blood cells in the sample	Use less amount of volume
	Incomplete suspension of cell pellet	Vortex or pipette pellet thoroughly
Low yield or no DNA in elute	Ethanol omitted from Wash Buffer	Add ethanol as described
	Poor elution	Add prewarmed water(>60°C) and incubate for 2 minutes
	Blood sample is too old	Use fresh samples
RNA contamination	RNase A omitted	Don't forget to add RNase A solution
	Insufficient RNase A digestion or too many blood cells	increase the incubation time or add 1 µl of RNase A to the purified DNA
Spin column is clogged	Too large sample volume or too many cells	Centrifuge for a longer period of time until the lysate or solution passes through the column
	The centrifuge force is not high enough.	Centrifuge for a longer period of time until the lysate or solution passes through the column.

Product Use Limitations

XNAPS blood gDNA flexspin kit is developed and sold for research purpose only. It is not to be used for human diagnostic or drug purposes or to be administered to humans and animals. The user is responsible to validate the performance of the system for any specific applications.

Product warranty

Renogen Biolab guarantees the performance of all products for applications as described in the technical handbook. If any product fails to perform as described due to any reason, other than misuse, we will replace it free of charge or refund the purchase price.

We reserve the rights to change, alter, or modify our products to enhance its performance and design. If you have any concerns about Renogen products and services, please contact us by telephone, fax, mail, or email.

Product Selection Guide

	Sample source	Sample quantity	Kit name and description	Cat. No.*
Plasmid	Culture medium	Mini(1-5 ml)	XNAPS plasmid minispin kit	NP1001A/B
		Flexible (1-150 ml)	XNAPS plasmid flexspin kit(100)	NP1004
Genomic DNA	Blood Buffy coat	Up to 0.3ml	XNAPS blood gDNA minispin kit	NP1011A/B
		10µl-10ml	XNAPS blood gDNA flexspin kit(100)	NP1014
	Cell/tissue	2x10 ⁶ cells or 30mg tissue	XNAPS cell/tissue gDNA minispin kit	NP1016A/B
		10 ³ -10 ⁷ cells or 1-100mg tissue	XNAPS cell/tissue gDNA flexspin kit(100)	NP1017
	Stool	100mg	XNAPS stool DNA minispin kit	NP1022A/B
		Flexible	XNAPS stool DNA flexspin kit(100)	NP1023
	swabs	one	XNAPS swab DNA minispin kit(100)	NP1024
	Body fluid, plasma, serum	Up to 0.25ml	XNAPS body fluid DNA minispin kit	NP1021A/B

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

Genomic DNA	Body fluid, plasma, serum	Up to 10ml	XNAPS body fluid DNA Flexspin kit(100)	NP1026
	Plant tissue	100mg	XNAPS plant DNA minispin kit(100)	NP1025
	soil	Up to 250mg	XNAPS soil DNA minispin kit	NP1034A/B
		Flexible	XNAPS RNA minispin kit(100)	NP1035
	Micro amount sample	Micro volume	XNAPS MicroDNA flexbond kit(100)	NP1038
Viral nucleic acid	Liquid sample	<0.25ml	XNAPS viral nucleic acid minispin kit	NP1032A/B
		Flexible	XNAPS viral nucleic acid flexbond kit(100)	NP1033
Total RNA	Animal cell, tissue	2x10 ⁶ cells, 30mg tissue	XNAPS RNA Minispin Kit	NP2001A/B
Others	Agarose gel, solution	Flexible	FastBack DNA minispin kit	NP3001A/B

Renogen Biolab Inc.

#310, 2386 East Mall, UBC, Vancouver, B. C. V6T 1Z3, Canada

TEL: 1-866-7124412(Toll free)

WEBSITE: www.renogenbio.com

Ordering Information

Customers in USA and Canada

To place an order, please use any of the following ways:

Phone: 1-866-712-4412(Toll free)
Mon.-Fri 8:00am-5:00pm (EST)
Fax: 1-651-204-9348
Mail: #310, 2386 East Mall
Vancouver, BC, V6T 1Z3
Canada

Customers out of USA and Canada

Please contact our authorized international distributors and local representatives. In areas without our distributors and representatives, following options are available:

Phone: 1-651-204-0326
Mon.-Fri 8:00am-5:00pm (EST)
FAX: 1-651-204-9348
Mail: #310, 2386 East Mall
Vancouver, BC, V6T 1Z3
Canada

Online Ordering

Ordering for all of our products from any places is available, 24 hours/day, 7 days/week. Online ordering is fast, and convenient. Please log on www.renogenbio.com for detailed information.