EURx® MOLECULAR BIOLOGY PRODUCTS

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Version 1.1
September 2019

GeneMATRIX Swab-Extract DNA Purification Kit

Kit for isolation of DNA from swabs

Cat. no. E3530

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Table of Contents

Content	25 preps E3530-01	100 preps E3530-02	Storage/Stability
Buffer S	0.9 ml	3.6 ml	15-25°C
Lyse S	12 ml	48 ml	15-25°C
Proteinase K (20 mg/ml)	0.3 ml	1.2 ml	–20°C
Sol S	12 ml	48 ml	2-8°C
Wash SX1	15 ml	60 ml	15-25°C
Wash SX2	15 ml	60 ml	15-25°C
Elution	3 ml	12 ml	15-25°C
DNA Binding Columns	25	2 x 50	15-25°C
Protocol	1	1	

Introductory Notes

NOTE 1 · Kit Specification. The kit is designed for the rapid isolation of total DNA from the swabs taken from mucous membranes, semen, saliva or blood.

NOTE 2 · Maximum Sample Portion. The maximum column binding capacity for DNA is 25 µg. The maximum volume of the column reservoir is 650 µl.

NOTE 3 · Kit Compounds Storage. The kit should be stored at room temperature, with the exception of Sol S buffer and Proteinase K. Sol S buffer should be kept at 2–8°C and Proteinase K at -20°C.

NOTE 4 · Maintaining Good Working Practice. All solutions should be kept tightly closed to avoid evaporation and resulting components concentration changes. To obtain high quality DNA, stick carefully to the protocol provided below.

Equipment and reagents to be supplied by the experimenter.

- [1 M] Dithiothreitol (DTT), ethanol [96–100% v/v], microcentrifuge, disposable gloves, sterile pipet tips, sterile 1.5–2 ml collection tubes. Heating block capable of incubation at 56–70°C.

Protocol

1. Apply 30 µl of activation **Buffer S** onto the **DNA binding spin-column** (do not spin) and keep it at room temperature till transfering lysate to the spin-column (for best results at least 10 min).

   - *Addition of Buffer S onto the center of the resin enables complete wetting of membranes and maximal binding of DNA.*

   - *The membrane activation should be done before starting isolation procedure.*

2. Prepare the swab from mucous membranes, semen, saliva or blood.

3. Cut using scissors the end of the swab stick and place in the 2 ml Eppendorf tube.

4. Add 400 µl of **Lyse S** buffer and 10 µl of **Proteinase K**. In the case of semen swabs add additionally 20 µl 1 M DTT.

5. Mix by inverting the tube several times or vortexing and incubate for 30 min at 56°C. Mix by inverting every 10 min.

6. Add 400 µl of **Sol S** buffer and mix thoroughly by inverting the tube several times.

7. Incubate for 10 min at 70°C.

8. Add 200 µl of ethanol (96–100%). Mix thoroughly by inverting the tube several times.

9. Centrifuge the tube with the swab stick for 2 min at 12 000 x g.

10. Transfer 600 µl of the lysate to the **DNA binding spin-column** and centrifuge at 11 000 x g for 30 sec. Remove the spin-column, pour off supernatant and place back into the receiver tube.

    - *Continue centrifugation, if not all of the lysate passed through the column.*

11. Transfer the remaining mixture to the same **DNA binding spin-column** and centrifuge at 11 000 x g for 1 min. Remove the spin-column, pour off supernatant and place back into the receiver tube.

12. Add 500 µl **Wash SX1** buffer to the spin-column and centrifuge for 1 min at 11 000 x g.

13. Take out the spin-column, discard flow-through and place back the spin-column in the collection tube.

14. Add 500 µl **Wash SX2** buffer to the spin-column and centrifuge for 1 min at 11 000 x g.

15. Spin down at 11 000 x g for 1 min to remove traces of the **Wash SX2** buffer.

16. Place the spin-column in a new collection tube (1.5–2 ml) and add 50–100 µl of **Elution** buffer to elute bound DNA.

   - *Addition of the elution buffer directly onto the center of the resin improves DNA yield. To avoid transfering traces of DNA between the spin-columns do not touch the spin-column walls with the micropippete.*

   - *In order to improve the efficiency of the elution genomic DNA from membrane, Elution buffer can be heated to a temperature of 80°C.*

   - *The following elution solutions can be used:*
     - *5–10 mM Tris-HCl buffer, pH 8.0–9.0.*
     - *0.5–1 x TE buffer, pH 8.0–9.0 (not recommended for DNA sequencing).*
     - *Other special application buffers can be used, if their pH and salt concentration is similar to that of 5–10 mM Tris-HCl, pH 8.0–9.0.*

17. Incubate the spin-column/collection tube assembly for 2 min at room temperature.

18. Centrifuge the spin-column for 1 min at 11 000 x g.

19. Discard spin-column, cap the collection tube. DNA is ready for analysis/manipulation. It can be stored either at 2–8°C or at -20°C.

Safety Information

Buffer S

Danger

H314 Causes severe skin burns and eye damage.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+**P330**+**P331** If swallowed: Rinse mouth. Do not induce vomiting.
P303+**P361**+**P353** If on skin (or hair): take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+**P351**+**P338** If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a poison center/doctor.
P405 Store locked up.

Lyse S

Warning

H319 Causes serious eye irritation.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+**P351**+**P338** If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+**P313** If eye irritation persists: get medical advice/ attention.

Proteinase K

Danger

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
P261 Avoid breathing vapours/spray.
P304+**P340** If inhaled: remove person to fresh air and keep comfortable for breathing.
P342+**P311** If experiencing respiratory symptoms: call a poison center or doctor/ physician.

Sol S

Warning

H302+**H332** Harmful if swallowed or if inhaled.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
P261 Avoid breathing vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+**P312** If swallowed: call a poison center/ doctor if you feel unwell.
P304+**P340** If inhaled: remove person to fresh air and keep comfortable for breathing.
P305+**P351**+**P338** If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+**P313** If skin irritation or rash occurs: get medical advice/attention.
P337+**P313** If eye irritation persists: get medical advice/ attention.
EUH032 Contact with acids liberates very toxic gas.

Wash SX1

Warning

H226 Flammable liquid and vapour.
H302+**H332** Harmful if swallowed or if inhaled.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+**P312** If swallowed: call a poison center/ doctor if you feel unwell.
P302+**P352** If on skin: wash with plenty of water.
P304+**P340** If inhaled: remove person to fresh air and keep comfortable for breathing.
P305+**P351**+**P338** If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Wash SX2

Danger

H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+**P351**+**P338** If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403+**P235** Store in a well-ventilated place. Keep cool.
P337+**P313** If eye irritation persists: get medical advice/ attention.

GeneMATRIX is synonymous for a family of synthetic, new generation, nucleic acid binding membranes.

The GeneMATRIX membrane family has gained fame for two striking features: First, for their extraordinary high binding capacity, allowing to isolate nucleic acids with optimal yield. Second, for their remarkably high specificity. Even compounds of pronounced chemical similarity such as DNA, RNA and polysaccharides are easily differentiated amongst each other by the selectivity of these highly optimized matrices. This feature allows to isolate highly pure nucleic acids, that remain to work reliable even after being subjected to extended storage periods (years). Or, directly upon isolation, when used in subsequent molecular biology applications, such as: restriction digestion, dephosphorylation, kinasing, ligation, protein-DNA interaction studies, sequencing, blotting, in vitro translation, cDNA synthesis, hybridization, etc ...

We take great care to fine-tune all components and variables of the nucleic acid purification system towards each other – a multi-parameter optimization.

All matrices ship conveniently pre-packed in a ready-to-use spin-column format. Spin columns are specifically constructed for precise adjustment of liquid flow-through rate to optimal values. Novel binding and washing buffers are developed to take full advantage of GeneMATRIX unique capacity, resulting in isolation of biologically active, high-quality nucleic acids. And, last not least, a lot of time and efforts went into development of the various GeneMATRIces, thus providing a platform of unique chemical composition.

High and continuous reproducibility of matrix performance is always warranted, since component preparation as well as stringent quality control is entirely performed in-house at EURx Ltd.

Whatever your experience with nucleic acids isolation kits may look like, most likely you will encounter a difference with GeneMATRIX. And, we are so much convinced, you'll love it. Enjoy.

GeneMATRIX Swab-Extract DNA Purification Kit is designed for rapid purification of total DNA (genomic, mitochondrial) from the swabs taken from mucous membranes, semen, saliva or blood, among others. Purified DNA is free of contaminants, such as: proteins, lipids, dyes, detergents, organic inhibitors of enzymatic reactions, buffers, salts, divalent cations, among others.

Both freshly taken and dried samples are subjected to lysis in the presence of special tissue- and cells solubilizing buffer, aided by proteolysis. Further, Proteinase K digests contaminating proteins, including stripping-off DNA of all bound proteins, among them nucleases. Optimized buffer and ethanol are added to provide selective conditions for DNA binding during brief centrifugation, while contaminants pass through the GeneMATRIX resin in the spin-column. Traces of contaminants remaining on the resin are efficiently removed in two wash steps. High-quality cellular DNA is then eluted in low salt buffer, e.g.: Tris-HCl, TE or water. Isolated DNA is ready for downstream applications without the need for ethanol precipitation.

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