

DNA IQ™ System

Use with Stains on Solid Material

The following document gives a detailed protocol for the use of the DNA IQ™ System with stains on solid material.

I. Product Information

Product	Size	Cat. #
DNA IQ™ System	100 samples	DC6701
	400 samples	DC6700
DNA IQ™ Spin Baskets	1,000/bag	V1221
Tissue and Hair Extraction Kit (for use with DNA IQ™)	100 reactions	DC6740
MagneSphere® Technology Magnetic Separation Stand	2 positions	Z5332
	12 positions	Z5342

II. Protocol

A. Preparation of Reagents

Materials to Be Supplied by the User

- 95–100% ethanol
- isopropyl alcohol
- 1M DTT

Preparation of 1X Wash Buffer

Note: The 2X Wash Buffer is supplied with the DNA IQ™ System (Cat.# DC6700 and DC6701).

1. For Cat.# DC6701 (100 samples), add 15ml of 95–100% ethanol and 15ml of isopropyl alcohol to the 2X Wash Buffer.

For Cat.# DC6700 (400 samples), add 35ml of 95–100% ethanol and 35ml of isopropyl alcohol to the 2X Wash Buffer.

2. Replace cap, and mix by inverting several times.
3. Mark label to record the addition of alcohols. Label bottle as 1X Wash Buffer. Solution can be stored at room temperature. Make sure the bottle is closed tightly to prevent evaporation.

Preparation of Lysis Buffer

1. Determine the total amount of Lysis Buffer to be used. DNA isolation from a 3–30mm² punch of FTA® paper or a piece of cloth up to 25mm² requires 250µl of Lysis Buffer per sample.
2. Add 1µl of 1M DTT for every 100µl of Lysis Buffer.
3. Mix by inverting several times.
4. Mark and date label to record the addition of DTT. This solution can be stored at room temperature for up to one month if sealed.

B. DNA Purification From Stains on Solid Materials

1. Place sample in a 1.5ml microcentrifuge tube.
2. Add the appropriate amount of prepared Lysis Buffer to cover the sample. A minimum of 100µl should be used. Close the lid, and place tube in a heat block at 70°C for 30 minutes.

Exceptions:

- a. Heat-sensitive fabrics (e.g. polyester and nylon): Extract without heating. Incubate at room temperature.
- b. Leather: Lysis Buffer extraction with or without heat may not work on some leathers. Extract in a small volume of aqueous buffer (100–200µl), such as TE⁻⁴, then add 2 volumes of Lysis Buffer after removing matrix.

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Note: For small stains, an alternative approach is to place the stained material in a DNA IQ™ Spin Basket seated in a 1.5ml microcentrifuge tube. Add 100–150µl of prepared Lysis Buffer to the basket. Carefully close the lid, and heat at 70°C for 30 minutes. Most of the buffer should remain in the basket if the indicated tubes and spin baskets are used. Proceed to Step 4.

3. Remove the tube from the heat block, and transfer the Lysis Buffer and sample to a DNA IQ™ Spin Basket.
4. Centrifuge at room temperature for 2 minutes at maximum speed. Remove the spin basket.

Note: It is important to centrifuge Lysis Buffer with the stained matrix to obtain maximum recovery.

5. Vortex the stock resin bottle for 10 seconds, and add 7µl of resuspended DNA IQ™ Resin to the DNA solution
6. Vortex the sample/Lysis Buffer/resin mixture for 3 seconds at high speed, and incubate for 5 minutes at room temperature. Vortex for 3 seconds every 1 minute during this 5-minute incubation.
7. Vortex for 2 seconds at high speed. Place tube in the magnetic stand. Separation will occur instantly.

Note: If resin does not form a distinct pellet on the side of the tube, vortex the tube and quickly place back in the stand.

8. Carefully remove and discard all of the solution without disturbing the resin pellet at the side of the tube.

9. Add 100µl of prepared Lysis Buffer. Remove tube from the magnetic stand, and vortex for 2 seconds at high speed.
10. Return tube to the magnetic stand. Carefully remove and discard all Lysis Buffer.
11. Add 100µl of prepared 1X Wash Buffer. Remove tube from the magnetic stand, and vortex for 2 seconds at high speed.
12. Return tube to the magnetic stand. Dispose of all Wash Buffer.
13. Repeat Steps 11 and 12 two more times for a total of three washes. Make sure all of the solution has been removed after the last wash.
14. With the tube in the magnetic stand and the lid open, air-dry the resin for 5 minutes. Do not dry for more than 20 minutes, as this may inhibit elution of DNA.
15. Add 100µl of Elution Buffer from the DNA IQ™ System.
16. Close the lid, and vortex tube for 2 seconds at high speed. Incubate at 65°C for 5 minutes.
17. Remove the tube from the heat source, and vortex for 2 seconds at high speed. Immediately place on the magnetic stand.
18. Carefully transfer the DNA solution to a container of choice.

Note: The DNA solution can be stored at 4°C for short-term storage or at –20°C or –70°C for long-term storage.