

AUTOMATION

Automation in a Forensic Laboratory: An Update

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INTRODUCTION

In September 2004, I published a *Profiles in DNA* article that described automation of the DNA IQ™ System^(f) using the Biomek® 2000 laboratory automation workstation and listed the necessary Promega hardware and labware (1). Since that time we have improved the DNA IQ™ methods for the Biomek® 2000 workstation. The new methods (version 2.0) have integrated a new shaker and electrical heater to replace the DPC shaker and thermal exchange unit with recirculating waterbath. Consequently, the hardware requirements listed in the earlier article are out-of-date. This new article provides a current list of the Promega hardware required to automate the DNA IQ™ System using the updated Biomek® 2000 methods and the recently developed Biomek® 3000 laboratory automation workstation and Tecan Freedom EVO® 100 automated liquid handler methods (2,3).

BECKMAN COULTER BIOMEK® 2000 AND 3000 LABORATORY AUTOMATION WORKSTATIONS

The hardware required from Promega to automate the DNA IQ™ System is exactly the same for both the Biomek® 2000 and Biomek® 3000 workstations; a list is shown in Table 1. For both workstations, a left-side module (Beckman Coulter Part# 987264) and right-side module (Beckman Coulter Part# 987263) are required. The previous DNA IQ™ method for the Biomek® 2000 workstation did not use a right-side module, as the DPC shaker was located on the right side of the deck. If you are upgrading from the earlier methods to the new DNA IQ™ methods, version 2.0, you will need to purchase a right-side module from Beckman Coulter.

The other major change for the Biomek® 2000 DNA IQ™ methods, version 2.0, is that the working plate has been changed from the shallow-well Collection Plate (Cat.# A9161) to the 1.2ml, Round-Bottom Deep Well Plate (Cat.# V6771). This deep-well plate is also used for the new Biomek® 3000 methods. The use of the deep-well plate allows more vigorous shaking on the new VARIOMAG® Teleshake shaker without the risk of cross-contamination (2). As with the previous DNA IQ™ methods for the Biomek® 2000, DNA is eluted into strip tubes (e.g., Continental Lab Products Cat.# 3426.8S) sitting in a MicroAmp® 96-well support base (Applied Biosystems Cat.# N801-0531).

Prior to placing samples on the deck of the Biomek® 2000 and 3000 and Tecan Freedom EVO® robots, the user must pre-process the samples in a 2.2ml Square-Well Deep Well Plate (Cat.# V6781) or Slicprep™ 96 Device (Cat.# V1391). The square-well plate can be used for any sample that is not on a solid support (e.g., a proteinase K digest of a hair follicle or tissue sample), whereas the Slicprep™ Device is used for DNA samples on a solid support (e.g., buccal swab).

TECAN FREEDOM EVO® 100 AUTOMATED LIQUID HANDLER

The list of Promega hardware required to automate the DNA IQ™ System using the Tecan Freedom EVO® 100 is provided in Table 2. This list does not include a shaker and heater, as the necessary shaker and heater are provided by Tecan Corporation and are different from the shaker and heater used with the Biomek® workstations.

This article provides a current list of the Promega hardware required to automate the DNA IQ™ System using updated methods for the Biomek® 2000 workstation and the recently developed methods for the Biomek® 3000 laboratory automation workstation and Tecan Freedom EVO® 100 automated liquid handler.

In addition to the hardware listed in Table 2, the labware in Table 3 is also required for the Tecan Freedom EVO® 100 liquid handler.

Unlike the Biomek® methods, the 2.2ml Square-Well Deep Well Plates are always required for the Tecan Freedom EVO® 100 method, regardless of sample type being processed. These plates are placed under the hanging disposable tips to separate adjacent tips from one another, thereby preventing cross-contamination during tip re-racking.

SUMMARY

This article summarizes the hardware and labware requirements for automating the DNA IQ™ System with the Beckman Coulter Biomek® 2000 and 3000 laboratory automation workstations and the Tecan Freedom EVO® 100 automated liquid handler. For further details, please contact your local Promega representative to arrange a quote for the necessary hardware and labware and to arrange on-site training and installation of methods for the DNA IQ™ System on these automated platforms.

REFERENCES

1. McLaren, B. (2004) Automation in a forensic laboratory. *Profiles in DNA* 7(2), 12–3.
2. McLaren, B. et al. (2006) Automating the DNA IQ™ System on the Biomek® 3000 laboratory automation workstation. *Profiles in DNA* 9(1), 11–3.
3. Cowan, C. (2006) The DNA IQ™ System on the Tecan Freedom EVO® 100. *Profiles in DNA* 9(1), 8–10.

Table 1. Promega Hardware Requirements for Automation of the DNA IQ™ System on the Biomek® 2000 and Biomek® 3000 Laboratory Automation Workstations.

Description	Promega Cat.#	Number Required
VARIOMAG® Teleshake	V6751	1
Shaker Integration Plate	V3691	1
V&P Scientific Heating Block	V6761	1
Deep Well Heat Transfer Block	V6741	1
MagnaBot® 96 Magnetic Separation Device*	V8151	1
1/4 inch Foam Spacer*	Z3301	1

*If you already have a Biomek® 2000 workstation configured for the previous DNA IQ™ methods, there is no need to purchase another MagnaBot® 96 Device or foam spacer, as the existing ones are compatible with the new version 2.0 methods for the Biomek® 2000 workstation.

Table 2. Promega Hardware Requirements for Automation of the DNA IQ™ System on the Tecan Freedom EVO® 100 Automated Liquid Handler.

Description	Promega Cat.#	Number Required
Deep Well Heat Transfer Block	V6741	1
Heat Block Insert	Z3651	1
MagnaBot® Adapter T1	V8481	1
MagnaBot® 96 Magnetic Separation Device	V8151	1
1/4 inch Foam Spacer	Z3301	1

Table 3. Promega Labware Requirements for Automation of the DNA IQ™ System on the Tecan Freedom EVO® 100 Automated Liquid Handler.

Description	Cat.#
1.2ml, Round-Bottom Deep Well Plate	Promega Cat.# V6771
2.2ml, Square-Well Deep Well Plate	Promega Cat.# V6781
Slicprep™ 96 Device (for use with DNA samples on a solid support)	Promega Cat.# V1391
Strip tubes	e.g., Continental Lab Products Cat.# 3426.8S
MicroAmp® 96-well support base	Applied Biosystems Cat.# N801-0531