March 2026

QIAsprint® Plasmid Application Guide

For automated purification of plasmid DNA from *E. coli*

Sample to Insight

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Required Kits and Components

For isolation of plasmid DNA from *E. coli* cultures, the following kits and components are required:

Required kit/component name	Cat. no.
QIAsprint Plasmid BOPP PrepSet (384)	588909
QIAsprint Essential Kit D (384)	588009
QIAsprint Prep Cover (8)	582103
QIAsprint Prep Plate Insert (32)	582226
QIAsprint Elution Plate (10)	583204

Optional kit/component name	Cat. no.
QIApHish Beads (17 mL)*	588900

* For culture protocols

Kit Contents

The QIAsprint Connect offers the possibility of a modular kit concept, and the following combination is recommended for purification of plasmid DNA from *E. coli* cultures or pellets.

QIAsprint Plasmid BOPP PrepSet **Catalog no.** **Number of preps**	**(384)** **588909** **384**
Buffer P1	110 mL
Buffer P2	110 mL
Buffer P3	2 × 110 mL
Buffer QBB	120 mL
Buffer ETR2 (concentrate)	50 mL
RNase A	11 mg

QIAsprint Essential Kit D **Catalog no.** **Number of preps**	**(384)** **588009** **384**
Buffer PE (concentrate)	3 × 20 mL
Buffer EB	55 mL
MagG Bead Suspension	12 mL

Shipping and Storage

The QIAsprint Plasmid BOPP PrepSet and QIAsprint Essential Kit D are shipped at ambient temperature.

All buffers and reagents should be stored at room temperature (15–25°C) until the expiration date printed on the box label.

After addition of RNase A, Buffer P1 is stable for 6 months when stored at 2–8°C.

Intended Use

The QIAsprint Plasmid BOPP PrepSet and QIAsprint Essential Kit D are intended for molecular biology applications. These products are not intended for the diagnosis, prevention, or treatment of a disease.

All due care and attention should be exercised in the handling of the products. We recommend all users of QIAGEN® products to adhere to the NIH guidelines that have been developed for recombinant DNA experiments, or to other applicable guidelines.

Safety Information

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, please consult the appropriate safety data sheets (SDSs). These are available online in convenient and compact PDF format at **www.qiagen.com/safety**, where you can find, view, and print the SDS for each QIAGEN kit and components.

Quality Control

In accordance with QIAGEN's ISO-certified Quality Management System, each lot of QIAsprint Plasmid BOPP PrepSet and QIAsprint Essential Kit D are tested against predetermined specifications to ensure consistent product quality.

Introduction

The application guide describes processing of the QIAsprint Plasmid BOPP PrepSet and QIAsprint Essential Kit D with the QIAsprint Connect instrument. For a detailed description of the QIAsprint Connect instrument, refer to the respective user manual (**www.qiagen.com/HB-3708**) and quick-start guide (**www.qiagen.com/HB-3709**). The QIAsprint Plasmid application enables automated high-throughput purification of plasmid DNA from *E. coli* cultures using the QIAsprint Connect instrument.

Magnetic-particle technology enables purification of high-quality nucleic acids that are free of proteins, nucleases, endotoxins, and other impurities. The purified nucleic acids are ready to use for highly sensitive detection in downstream assays, such as enzymatic reactions or transfection of robust cells. The QIAsprint Connect can process up to 96 samples per run.

Automated purification on QIAsprint Connect

Nucleic acid purification is fully automated on the QIAsprint Connect platform. The advanced technology integrated into QIAsprint Connect ensures efficient purification of nucleic acids for a wide range of applications while offering exceptional flexibility to allow customers to customize their purification protocols according to specific requirements.

QIAsprint Connect provides comprehensive protocols and purification guides for plasmid DNA, gDNA, RNA, and viral/bacterial nucleic acids.

Figure 1. The QIAsprint Connect instrument.

Principle and procedure

The QIAsprint Plasmid BOPP PrepSet and QIAsprint Essential Kit D combine the speed and efficiency of silica-based nucleic acid purification with the convenient handling of magnetic particles. The purification procedure is designed to ensure safe and reproducible handling of potentially infectious samples. The purification procedure comprises four steps: lyse, bind, wash, and elute.

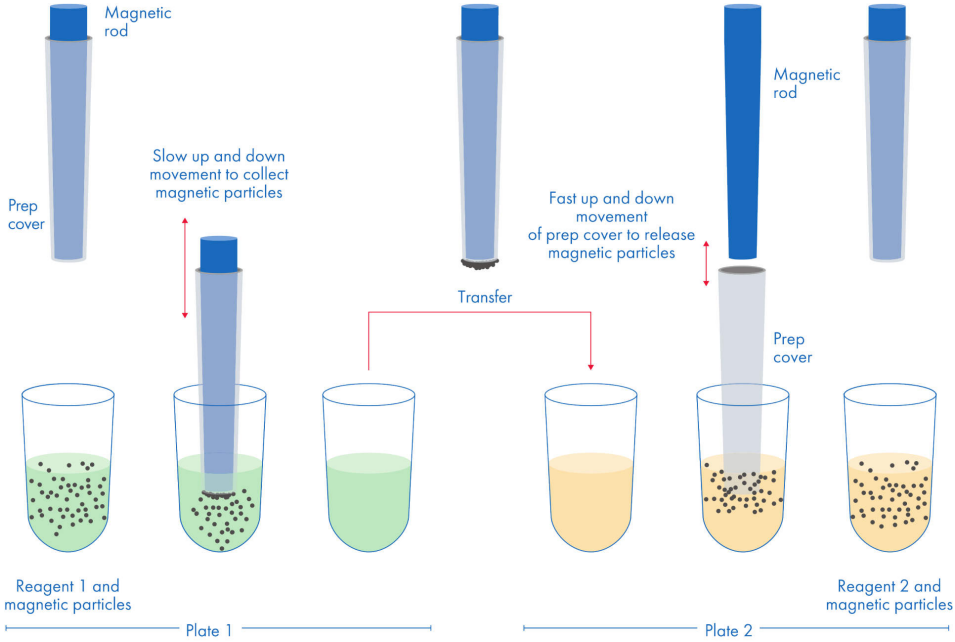

Figure 2. Handling of magnetic particles by the QIAsprint Connect instrument.

Binding to magnetic particles

The QIAsprint Plasmid BOPP PrepSet, together with the Essential Kit D, includes material to be used with an automated protocol for purification of plasmid DNA from *E. coli* cultures.

When using the pellet protocol, the resuspended bacterial pellet is transferred onto the instrument. Pellets are thoroughly mixed to ensure optimal adsorption of DNA to the silica surface of the magnetic particles.

For the fully automated culture protocol, starting directly with the *E. coli* culture, additional QIApHish Beads (cat. no. 588900) are needed. After adjusting the pH and adding the QIApHish Beads, the culture can be directly placed on the instrument. Here, they are thoroughly mixed to ensure optimal capturing of bacterial cells to the surface of the QIApHish magnetic particles.

Washing of bound nucleic acids

While DNA remains bound to the magnetic particles, contaminants are efficiently washed away during a sequence of wash steps using Buffer ETR2 and Buffer PE.

Elution of purified nucleic acids

In a single step, purified DNA is eluted in Buffer EB. The use of magnetic particles may lead to a slight reduction in volume for the eluate due to the inherent dead volume of the particles. The purified plasmid DNA can be either used immediately in downstream applications or stored for future use.

Equipment and Reagents to Be Supplied by User

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, consult the appropriate safety data sheets (SDSs) available from the product supplier.

All protocols

- Standard microbiological equipment for growing and harvesting bacteria (e.g., inoculating loop, culture tubes and flasks, and 37°C shaking incubator)
- Pipettes and sterile pipette tips
- Disposable gloves
- 96–100% Ethanol*
- 99% Isopropanol
- 1 M HCl (for culture protocol)
- Vortexer
- **Optional**: QIAsprint Frame Shield (100) (cat. no. 580010)

  Note: If desired, use QIAsprint Frame Shield to minimize adhesions of beads to the QIAsprint Prep Cover Frame (cat. no. 582111). For this, place QIAsprint Frame Shield into the QIAsprint Prep Cover Frame before loading the QIAsprint Prep Cover. After the run, discard the QIAsprint Frame Shield.
- QIAsprint Connect consumables (see Table 1)

* Do not use denatured alcohol, which contains other substances such as methanol or methyl ethyl ketone.

Table 1. QIAsprint Connect consumables

Item	Cat. no.	Pieces required for 4 × 96 samples
QIAsprint Prep Cover (8)	582103	4
QIAsprint Prep Plate Insert (32)	582226	16
QIAsprint Elution Plate (10)	583204	4

For culture protocol

- QIApHish Beads (17 mL) (cat. no. 588900)

For pellet protocol

- Centrifuge with rotor for 96-well blocks

  We recommend QIAGEN's Centrifuge 4-16S (cat. no. 80510) for room temperature centrifugation; for refrigerated centrifugation, we recommend QIAGEN's Centrifuge 4-16KS (cat. no. 81610).

Important Notes

Read the following notes before starting any of the QIAsprint procedures

Cell cultivation in a 96-well block for QIAsprint Plasmid workflow

Fill each well of a 96-well S-Block with 1 mL of growth medium containing the appropriate selective agent. Inoculate each well from a single bacterial colony. Incubate the cultures for 20–24 h at 37°C with vigorous shaking.

For the culture protocol (see below), the cultures should be grown in a QIAsprint prep plate for direct transfer to the instrument.

The wells in the block may be protected against spill-over by covering the block with a plastic lid or adhesive tape. AirPore microporous tape sheets promote gas exchange during culturing (see "Ordering Information", page 24). If nonporous tape is used, use a needle to pierce 2–3 holes in the tape above each well for aeration.

Things to do before starting all protocols

- Add the provided RNase A solution to Buffer P1 before use. Use 1 vial of RNase A (centrifuge briefly before use) per bottle of Buffer P1 for a final concentration of 100 µg/mL. Mix and store at 2–8°C.
- Add ethanol (96–100%) to Buffer PE before use (see bottle label for volume).
- Add isopropanol (99%) to Buffer ETR2 before use (see bottle label for volume).
- Check Buffers P2, QBB, and ETR2 for precipitation due to low storage temperature and, if necessary, dissolve by warming to 37°C.

- Close the bottle containing Buffer P2 immediately after use to avoid acidification of Buffer P2 from CO_2 in the air.

  Buffers P2 contains irritants. Wear gloves when handling these buffers.

Elution volumes and eluate handling

In the final step of the purification procedure, the DNA is eluted in Buffer EB. An elution volume of 100 µL is recommended, but 50 µL can also used when increased concentration is required. However, this could result in a slight decrease of the total yield.

Storing DNA

For short-term storage of up to 24 h, we recommend storing the purified DNA at 2–8°C. For long-term storage of over 24 h, we recommend storage at –90°C to –65°C (preferred) or at –30°C to –15°C.

Working with the QIAsprint Connect

Procedure on the QIAsprint Connect

1. Turn on the QIAsprint Connect instrument and log in.
2. Navigate to the Protocols screen with the tab in the upper part of the home screen.
3. Locate the desired protocol for the plasmid DNA application, and press ⋮ and ▶ Run protocol .

   Optional: Enter run information in the Run details screen. This information will be displayed in the run report.
4. Close the hood and press **Confirm** to get to the loading screen.

5. With the plate hotels located on the lab bench, insert the plates according to the screen instructions into the hotels.
    - The QIAsprint Prep Cover must be located in the metal prep cover frame.

      Note: If desired, use the QIAsprint Frame Shield to minimize adhesions of beads to the QIAsprint Prep Cover Frame. For this, place QIAsprint Frame Shield into the QIAsprint Prep Cover Frame before loading the QIAsprint Prep Cover. After the run, discard the QIAsprint Frame Shield.
    - All QIAsprint Prep Plates need to sit firmly in their metal frames.
    - The QR codes need to face the user.
6. Open the hood and place the hotels on their platforms, taking care not to mix up the left and right hotels.
7. Press **Start run** to start the run.
8. After the end of the run, remove the plate hotels from the instrument. Store the elution plate safely or use it directly in your downstream applications.

Protocol: Purification of Plasmid DNA from Culture

This protocol is intended for the purification of plasmid DNA directly from a 1 mL *E. coli* culture.

Plate preparation

Table 2. Assignment of the prep plate inserts for the QIAsprint Connect Plasmid Culture Protocol

Step	Buffer	Volume (µL)
Lysis	P1 P2	200 200
Neutralization	P3	500
Wash 1	ETR2	1000
Wash 2	PE MagG Bead Suspension	750 30
Binding	Buffer QBB MagG Bead Suspension	300 20
Elution	EB	100

1. Set the pH value of the culture to pH 3 (when using LB medium, this corresponds to adding 50 µL of 1 M HCl to 1 mL culture).
2. Add 40 µL QIApHish Beads to each well of the culture.
3. Place the plate in the QIAsprint Connect according to the instrument's instructions.
4. Start the run.

Protocol: Purification of Plasmid DNA from Pellets

This protocol is intended for the purification of plasmid DNA from an *E. coli* pellet derived from 1–5 mL of *E. coli* culture.

Plate preparation

Table 3. Assignment of the prep plate inserts for the QIAsprint Connect Plasmid Pellet Protocol

Step	Buffer	Volume (µL)
Lysis	P2	200
Neutralization	P3	500
Wash 1	ETR2	1000
Wash 2	PE MagG Bead Suspension	750 30
Binding	Buffer QBB MagG Bead Suspension	300 20
Elution	EB	100

1. Harvest the bacterial cells in the block by centrifugation for 5 min at 2100 × *g* in a centrifuge with a rotor for microplates (e.g., QIAGEN Centrifuge 4K15C or Heraeus® Minifuge GL), preferably at 4–10°C. The block should be covered with adhesive tape during centrifugation. Remove the media by inverting the block.

   To remove the media, peel off the tape and quickly invert the block over a waste container. Tap the inverted block firmly on a paper towel to remove any remaining droplets of medium.

Important: Ensure that the buckets on the rotor have sufficient clearance to accommodate the 2 mL S-Blocks before starting the centrifuge.

2. Resuspend the pelleted bacteria in 200 µL Buffer P1.
3. Transfer the cell suspension into the lysis plate to the prefilled Buffer P2.
4. Start the run immediately. Do not allow lysis to proceed for more than 5 min.

Troubleshooting Guide

This troubleshooting guide may be helpful in solving any problems that may arise. For more information, see also the Frequently Asked Questions page at our Technical Support Center: **www.qiagen.com/FAQ/FAQList.aspx** (for contact information, visit **support.qiagen.com**).

	Comments and suggestions
General handling	
Error message in instrument	Refer to the *QIAsprint Connect User Manual* (**www.qiagen.com/HB-3708**).
Low or no yield	
Plasmid did not propagate	Check that the conditions for optimal growth were met. For more details, see (**www.qiagen.com/goto/plasmidinfo**)
Buffer P2 or QBB precipitated	Redissolve by warming to 37°C.
Magnetic particles not completely resuspended	Ensure to mix MagG Bead Suspension as well as the binding master mix well before pipetting.
Buffer ETR2 or PE prepared incorrectly	Check that Buffer ETR2 and Buffer PE concentrates were diluted as indicated on the bottle with the correct volume of isopropanol or ethanol, respectively. Use 96–100% ethanol. Do not use denatured alcohol, which contains other substances such as methanol or methyl ethyl ketone. Repeat the purification protocol with new samples.
Too much or too little input material used	Adhere to the instructions regarding the respective input material. High amounts may increase viscosity and bead carryover.
Cell resuspension incomplete (pellet protocol)	Pelleted cells should be completely resuspended in Buffer P1. Do not add Buffer P2 until an even suspension is obtained.
Beads in eluate	
Too much input material used	Adhere to the instructions regarding sample material.
High input material used	When using high amounts of sample material — depending on strain and plasmid, small bead fragment could appear in the eluate. They stick tight to plastic at the bottom of the plate and will not interfere with any downstream application. The eluate can also be easily transferred to another tube without bead carryover.

	Comments and suggestions
Alcohol carryover	When using high volumes of eluate in a very sensitive downstream assay, consider using the extended air-dry time after the 2nd washing step in the protocol to remove residual alcohol.

Contact Information

For technical assistance and more information, please see our Technical Support Center at **www.qiagen.com/Support** or contact one of the QIAGEN Technical Service Departments or local distributors (visit **support.qiagen.com**).

Ordering Information

Product	Contents	Cat. no.
QIAsprint Plasmid BOPP PrepSet (384)	For 384 plasmid preps: Buffer P1, Buffer P2, Buffer P3, Buffer QBB, and Buffer ETR2 concentrate	558909
QIAsprint Essential Kit D (384)	For 384 plasmid preps: Buffer PE concentrate, Buffer EB, and MagG Bead Suspension	558009
QIAsprint Prep Cover (8)	Set of 8 prep covers for use with QIAsprint Connect	582103
QIAsprint Prep Plate Insert (32)	Set of 32 prep plate inserts for use with QIAsprint Connect	582226
QIAsprint Elution Plate (10)	Set of 10 elution plates for use with QIAsprint Connect	583204
Related products		
QIAsprint Connect	Benchtop instrument for automated isolation of nucleic acids; includes 1 year warranty on parts and labor	9001234
QIAsprint Frame Shield (100)	Set of 100 frame shields for use with QIAsprint Connect	580010
QIAsprint Prep Cover Frame (2)	Set of 2 prep cover frames for use with QIAsprint Connect	582111
QIAsprint Prep Plate Frame (2)	Set of 2 prep plate frames for use with QIAsprint Connect	582211

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at **www.qiagen.com** or can be requested from QIAGEN Technical Support or your local distributor.

Document Revision History

Date	Description
03/2026	Initial release

Limited License Agreement for QIAsprint Plasmid BOPP PrepSet

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