USER GUIDE

ExiPrep™ Plus Plant Total RNA Kit

Cat. No. K-4244

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ExiPrep™ Plus Plant Total RNA Kit

Kit for the extraction of RNA from plants

User Guide

K-4244

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Please read all the information in booklet before using the unit

BIONEER Corporation

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Intended Use

ExiPrep™ Plus Plant Total RNA Kit is developed and supplied for research purposes only. Certain applications possible with this kit may require special approval by appropriate local and/or national regulatory authorities in the country of use.

Safety Warning and Precaution

Wear appropriate protection when handling any irritant or harmful reagents. The use of a laboratory coat, protective gloves and safety goggles are highly recommended. For more information, please consult the appropriate Material Safety Data Sheet (MSDS).

Warranty and Liability

All BIONEER products undergo extensive Quality Control testing and validation. BIONEER guarantees quality during the warranty period as specified, when following the appropriate protocol as supplied with the product. It is the responsibility of the purchaser to determine the suitability of the product for its particular use. Liability is conditional upon the customer providing full details of the problem to BIONEER within 30 days.

Quality Management System ISO 9001 Certified

Every aspect of our quality management system from product development, production to quality assurance and supplier qualification meets the world-class standards.

Patent

ExiPrep™ and its kits are protected by the patents KR10-2015-0089172.

Trademark

ExiPrep™ is a trademark of BIONEER Corporation.

Copyright

Notice

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Product Information

Components

Components	Amount	Storage
Buffer Cartridge ①	6 ea	Store at room temperature (15-25°C).
Buffer Cartridge ②	6 ea	
Plant Lysis Buffer	40 ml x 1 ea	
β-Mercaptoethanol	1 ml x 1 ea	
Disposable Filter Tip	3 packs (32 ea/pack)	
Elution Tube	8-tube strips x 12 ea	
User Guide	1 ea	

*** Note:** All provided consumables including disposable tips, reaction tubes, and elution tubes are DNase- and RNase-free.

Storage

The kit will maintain performance for at least two years under standard storage conditions.

Each Buffer Cartridge is hermetically sealed with a three-ply sealing foil and then wrapped in film to protect against leakage, evaporation, and cross-contamination. The Buffer Cartridges can be stored dry at room temperature (15-25°C) for up to 2 years from the date of delivery, provided they remain sealed.

Specifications

ExiPrep™ Plus Plant Total RNA Kit				
	Leaf tissue (wet)		**Seed**	
	Chinese cabbage	Broccoli	Chinese cabbage	Red bean
Amount of Starting Material	100 mg	100 mg	100 mg	100 mg
Typical RNA Yield	< 15 µg	< 8 µg	< 5 µg	< 9 µg
Elution Volume	50 µl	50 µl	50 µl	50 µl
RNA Purity (A_{260}/A_{280})	> 2.0	> 2.0	> 2.0	> 2.0
RNA Purity (A_{260}/A_{230})	> 2.0	> 2.1	> 1.8	> 1.5

*** Note:** There may be differences in measured values depending on the type of samples.

Precautions

- RNA is highly susceptible to degradation by exogenous RNase that may be introduced during the handling steps, all the steps must be conducted under sterile, RNase-free condition.
- RNase-free reagents, pipette tips, and tubes must be used with gloved hands while handling them.

Introduction

Product Description

ExiPrep™ Plus Plant Total RNA Kit is designed for extraction of highly purified RNA from plant tissues such as leaf, flower, or seeds. *ExiPrep*™ Plus Plant Total RNA Kit provides total solution for accurate and rapid total RNA extraction. The kit employs our unique Buffer Cartridge system. The Buffer Cartridges contain all components for nucleic acid extraction, including: binding buffer, washing buffer, elution buffer, and magnetic nanobead solution. The Buffer Cartridges are key to extract total RNA with the aid of *ExiPrep*™16 Plus (Cat. No. A-5030). *ExiPrep*™16 Plus is designed for rapid extraction of nucleic acids delivering up to 16 extracted samples automatically.

RNA extracted through this kit can be used for a variety of applications, including: reverse transcription PCR (RT-PCR), reverse transcription quantitative PCR (RT-qPCR), chip-array analysis, and cDNA synthesis.

Principle

ExiPrep™ Plus Plant Total RNA Kit uses Magnetic Nano Beads to extract nucleic acid. Buffers within the kit assist nucleic acid to bind to silica-coated magnetic nanobeads. As a result, high yield and highly purified nucleic acid is extracted from samples.

The Buffer Cartridges consist of binding buffer, washing buffer, elution buffer, and magnetic nanobeads. Samples are lysed and homogenized in the presence of a guanidine-thiocyanate-containing buffer, which is a highly denaturing agent and inactivates RNase to isolate RNA. Extracted RNA is bound to silica-coated magnetic nanobeads. Cell debris and other contaminants are eliminated by subsequent washing, and highly purified RNA is eluted in an elution buffer or RNase-free water.

Features & Benefits

- Convenient & Rapid: Uses a pre-filled buffer cartridge system in which enzymes and reagents for nucleic acid extraction are dispensed.
- Reproducible: Uses fully automatic nucleic acid extraction equipment, and reproducible results can be obtained.
- Efficient: Contains all required consumables such as Disposable Filter Tips and Elution Tubes.
- Ready-to-use: Extracted RNA is ready-to-use for various application.

Components of Buffer Cartridges

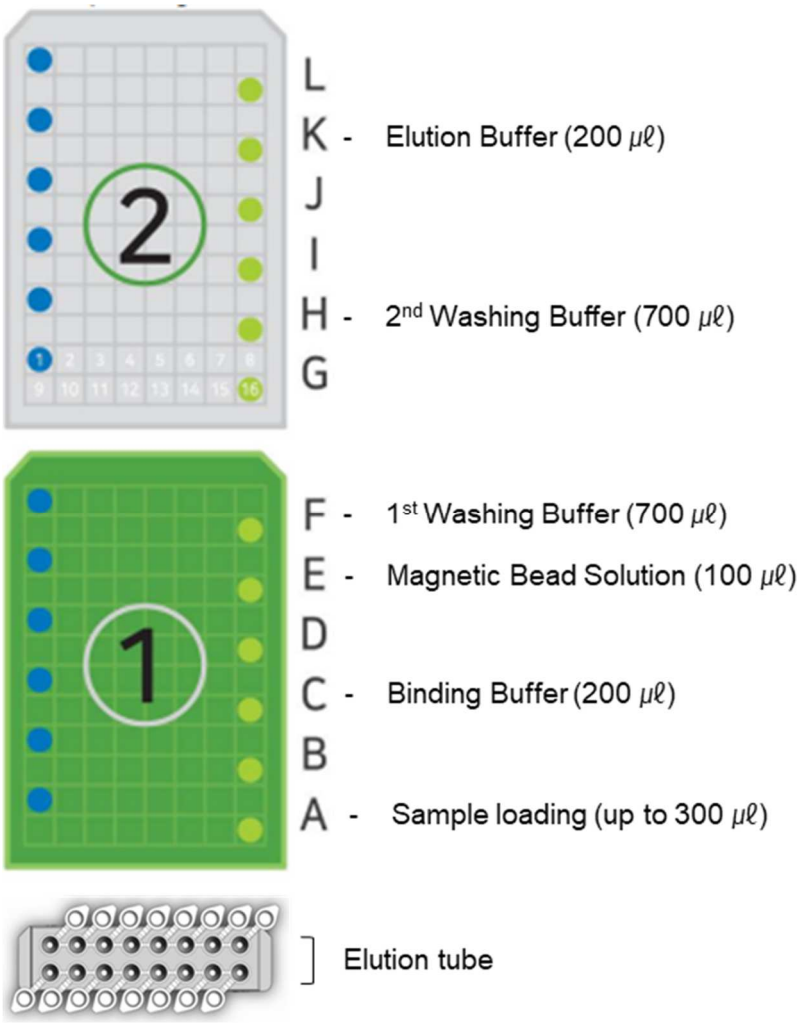


Figure 1. Position of reagents, tubes, and starting material in Cartridges/Elution Tube Rack of *ExiPrep*™ Plus Plant Total RNA Kit (K-4244).

Experimental Procedures

Preparing Sample from Plant Tissues and Seeds

1. Grind ≤ 100 mg of plant sample in liquid nitrogen† to a fine powder with a mortar and pestle and place them into a 1.5 ml tube.
   * **Note:** Do not allow the sample to thaw.
   † After grinding, liquid nitrogen should be evaporated.

2. Add 20 µl of β-Mercaptoethanol per 1 ml of Plant Lysis Buffer.
   * **Note:** β-Mercaptoethanol must be added to Plant Lysis Buffer before use, and dispense in a fume hood.
   * **Note:** Plant Lysis Buffer containing β-Mercaptoethanol can be stored at room temperature for up to 1 month.

3. Add 200 µl of Plant Lysis Buffer with β-Mercaptoethanol prepared in step 2 to sample and mix well by vortexing. For dried tissue or seeds, add 300 µl of Plant Lysis Buffer with β-Mercaptoethanol.
   * **Note:** Storage of Plant Lysis Buffer at lower temperatures may cause precipitation. If precipitated, heat the buffer at 65°C to re-dissolve.

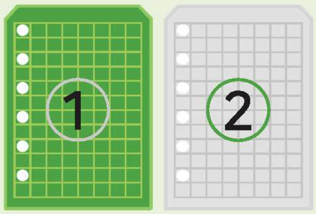
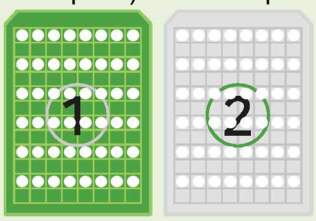
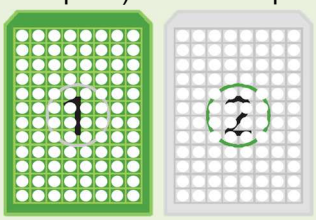
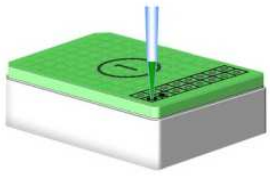
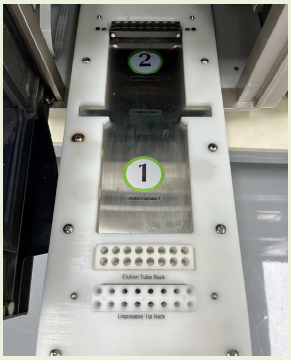
4. Incubate at room temperature for 15 minutes.

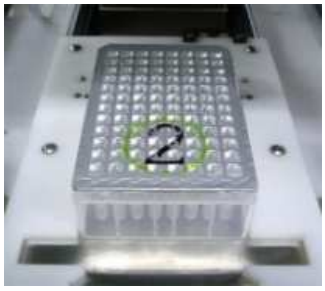
5. Centrifuge at 13,000 rpm for 5 minutes to remove any precipitates.

6. Transfer the cleared lysate to a new 1.5 ml tube (not provided).

7. Proceed immediately to “Loading the Kit to the Instrument” on page 8.

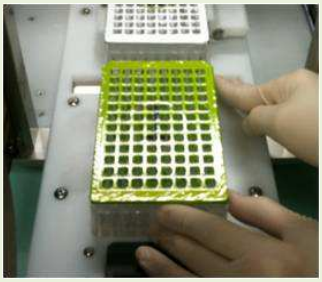
Loading the Kit to the Instrument

Steps	Procedure Details
Example 1) For 1 sample  Example 2) For 8 samples  Example 3) For 16 samples  	1. Punch holes in the sealing films of Buffer Cartridge ① and ② using 6-Hole Punch (*ExiPrep*™ 16 Plus's accessory) according to the number of samples. *** Note:** Before punching the hole, agitate the Buffer Cartridge gently to settle the beads and buffer.
	2. Load the sample prepared in page 7 into 'Sample loading well' of Cartridge ①. *** Note:** Be careful not to contaminate any other wells.
 	3. Open the door of *ExiPrep*™ 16 Plus and pull out the baseplate completely.

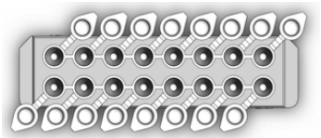


4. Place the Buffer Cartridge ② onto the proper position of the baseplate.

* **Note:** Please check the punched holes of the Buffer Cartridge ②.

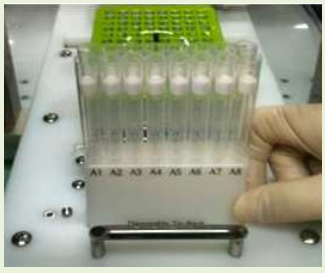


5. Place the Buffer Cartridge ① onto the proper position of the baseplate.



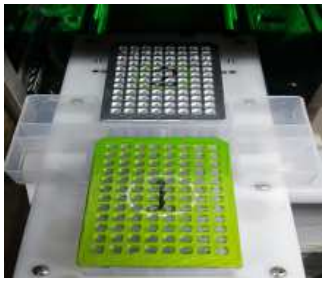
6. Place the Elution Tube Rack including Elution Tubes onto the proper position of the baseplate. The Elution Tube Rack is slotted so it can only be placed in the correct orientation.

* **Note:** Make sure the direction of the Elution Tube caps laid out as on the left when inserting into the Elution Tube Rack.



7. Place the Disposable Filter Tip Rack onto the proper position of the base plate.

* **Note:** Tips should be placed in the corresponding positions with the punched holes of the Cartridges.



8. Place the Waste tray between Buffer Cartridge ① and ②.

9. Finally, confirm holes in the cartridges and position of samples and tips. Push the baseplate completely until you hear the click sound, then close the door.

10. Turn on the *ExiPrep*™ 16 Plus.

11. In the MENU screen, press 'Start' button to select a proper protocol.

12. The PREP SETUP screen appears as shown in the left, and a screen to select the protocol number for each kit appears. Press **'204' or '205'** according to sample type. Confirm following information displayed on the screen, and then press the 'Enter' button.

Protocol. No.: 204	**Protocol. No.: 205**
Prep Type: Total RNA	**Prep Type: Total RNA**
Sample SRC: Plant tissue	**Sample SRC: Plant seed**

13. Select the desired elution volume from the touch screen.

14. Press the 'ok' button to move to the next step.

15. Ensure that everything is correctly installed following the CHECK LIST, then choose "ok".

16. In the Running Mode screen, ensure that the protocol name appears on the screen.

17. Press the "RUN" button to initiate DNA extraction.

18. “Work Completion” screen appears when the protocol is completed. Open the door and collect final DNA from the Elution Tubes.

19. Remove all components used in the experiment, and choose 1, 2, or ok.

*** Note:** If you want to quit and press the ‘ok’ button, the UV lamp will be turned on automatically.

Troubleshooting

Problem	Comments
Low RNA yield or purity	• **You may have used too much (or too little) starting material.** RNA yield is dependent on the sample type and amount of starting sample. Appropriate amount of starting sample should be used for efficient extraction of total RNA. For mor information, refer to “Specifications” on page 2.
	• **The lysis may have been incomplete.** Centrifuge completely to obtain clear lysate.
	• **Incomplete suspension of the magnetic nanobeads may decrease the RNA yield or purity.** You should agitate the Buffer Cartridge ① before use.
Co-eluted magnetic nanobeads	Sometimes magnetic nanobeads are eluted with your total RNA. Magnetic nanobeads in the eluate will not affect the performance of the RNA in downstream applications. Furthermore, magnetic nanobeads cannot bind RNA in elution buffer, though it may affect readings on a spectrophotometer. Magnetic nanobeads that are carried over can be easily separated by centrifugation at 13,000 rpm for 1 minute.

Ordering Information

Description	Cat. No
ExiPrep™ Plus Plant Total RNA Kit	K-4244

Related Products

Description	Cat. No
ExiPrep™16 Plus	A-5030
ExiProgen™	A-5041

Explanation of Symbols

EC REP Authorized Representative in the European Community	LOT Batch Code	Biological Risks	REF Catalog Number
Caution	Consult Instructions For Use	Contains Sufficient for <n> tests	Do not Re-use
IVD *In vitro* Diagnostic Medical Device	Manufacturer	RUO Research Use Only	Temperature Limitation
Use-by Date			

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