

Bioneer

Bioneer Corporation
is Korea's leading
biotech company.

ExiProgen™ Protein Synthesis & RNA/DNA Prep System

Introducing the world's first automated protein synthesis
and RNA/DNA prep system!



ExiProgen™ - Automated Protein Synthesis/Purification System ●●●

Bioneer's ExiProgen™ is the world's first automated protein synthesis and RNA/DNA purification system. Proteins can be expressed *in vitro* and affinity purified using His-tag purification for high-purity proteins. Up to 16 different types of highly purified protein can be obtained each from 1~10 μg of DNA. (Figure 1) Because the entire process is automated, you will obtain reliable and reproducible results run after run.

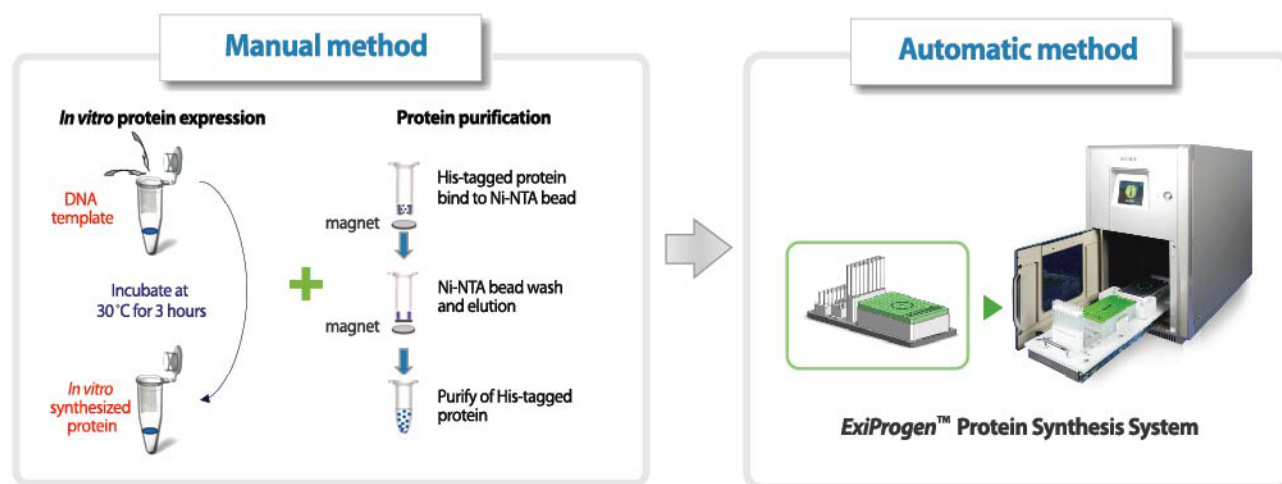


Figure 1. Principle of protein synthesis with ExiProgen™

Left panel: Manual method of protein expression/purification - sequential and tedious

Right panel: Automated method of protein expression/purification - simply add DNA and press start!

Features and Benefits

- **Fully automatic: DNA-in-Protein-out**
Pipette 1~10 μg of DNA into the kit and load into ExiProgen™ for high-purity proteins within 6 hours.
- **Parallel Process**
Synthesize and purify 1 to 16 unique proteins simultaneously.
- **High performance**
The system enables synthesis of proteins that are toxic to *in vivo* expression systems.
- **High purity and High yield**
Each well will yield up to 100 μg protein that is >90% pure.
- **Reproducibility**
Since you only need to add template DNA to obtain your protein, reproducibility is maximized.

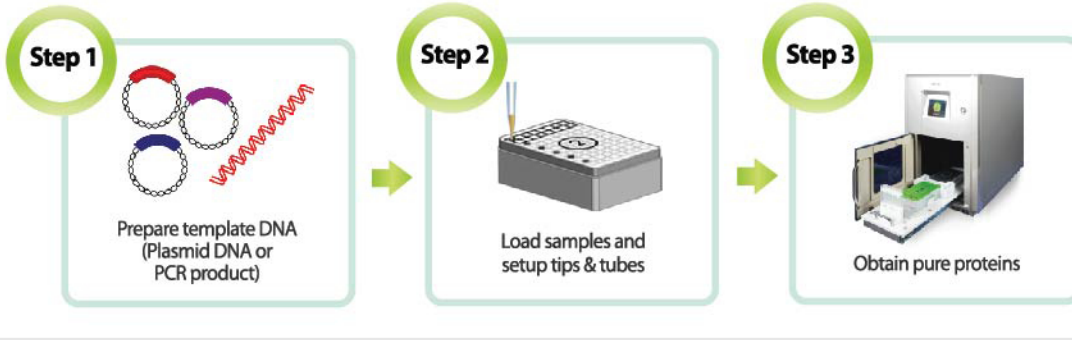
Template DNA

The template DNA for protein synthesis can be in plasmid or PCR product form. Bioneer's Gene Synthesis Service can provide template DNA that is optimized for expression with ExiProgen™ Kits. To maximize protein synthesis efficiency, we recommend you choose our ExiProgen™ Gene Synthesis Service. Please visit our homepage (www.bioneer.com) for more information.

Experimental Data

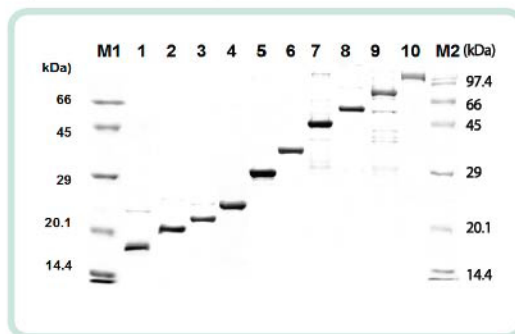
• Experimental Procedure

- Template DNA: 1~10 μ g/40 ul (purity>1.8)
- ExiProgen Protocol number: 902
- Total reaction time: <6 hr
- Total yield: \pm 100 μ g/reaction



• Experimental Results

Proteins as small as 10 kD and as large as 120 kD have been synthesized with ExiProgen™.

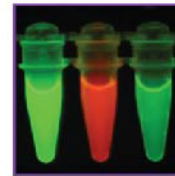


Protein synthesis data of various proteins!

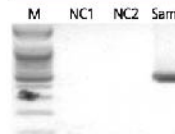
M1; *AccuLadder*™ Protein Size Marker (Low), M2; *AccuLadder*™ Protein Size Marker (Broad)
1; CalmL3 (17.5 kDa), 2; RNase H (20 kDa), 3; DUSP 3 (22 kDa), 4; CAT (24 kDa), 5; AcGFP (29 kDa), 6; EF-Ts (34 kDa),
7; VF (45 kDa), 8; Poly A polymerase (50 kDa), 9; MMLV RTase (75 kDa), 10; BM3 (117 kDa)

Proteins synthesized with ExiProgen™ can be assayed for functionality. Many established recombinant proteins exhibit full functional activity after purified with ExiProgen™.

SfGFP RFP AcGFP



Detection of fluorescence emitted from fluorescent proteins.
Fluorescence from protein elution samples detected with UV illuminator.



Amplification of GAPDH of Human total RNA with MMLV RTase
Lane M: 100 bp DNA Ladder,
Lane NC1: Negative control 1 (No-RNA),
Lane NC2: Negative control 2 (No-enzyme),
Lane Sample: 10 ng Human total RNA from HeLa cell.

Ordering Information

Product	Cat. No.
ExiProgen™ EC Protein Synthesis Kit, 16, 32, 96 reactions	K-7300 / K-7302
ExiProgen™ EC-Maxi Protein Synthesis Kit, 8 reactions	K-7310
ExiProgen™ EC-TF Protein Synthesis Kit, 8 reactions	K-7320
ExiProgen™ EC-Disulfide Protein Synthesis Kit, 8 reactions	K-7330
AccuRapid™ Cell-Free Protein Expression Kit, 45ul x 24 reactions	K-7250
AccuRapid™ Midi Protein Expression Kit, 1mL x 5 reactions / 10mL x 1 reactions	K-7260 / K-7270
ExiProgen™ Proxpress PCR Template Kit, 16 reactions	K-7400
pBIVT vector set-1, each 5ug	K-7350
Gene Synthesis Service	S-2041
Protein Synthesis Service	S-2500

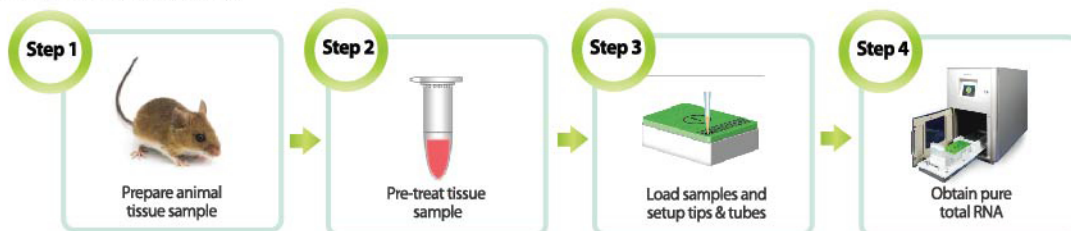
ExiProgen™ - Automated RNA Extraction System ●●●

Features and Benefits

- All reagents necessary for total RNA extraction are contained within the pre-filled Buffer Cartridges.
- Additional user convenience is provided with RNase-free disposable filter tips and elution tubes, which are all provided within the kit packaging.
- Total RNA can be extracted from a minimum of 1 to a maximum of 16 samples simultaneously.
- Silica magnetic particles developed in-house with Bioneer technology (Korea Patent No. 10-1053023) for unparalleled performance.
- Top-notch reproducibility by using an automated extraction system (ExiProgen™).

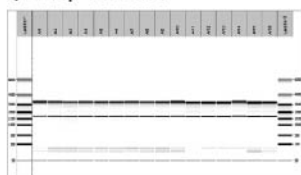
1. Total RNA Extraction from Animal tissue

• Experimental Procedure

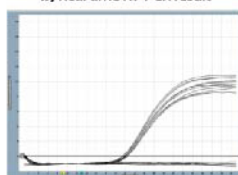


• Experimental Results

a) Electrophoresis result



b) Real time RT-PCR result

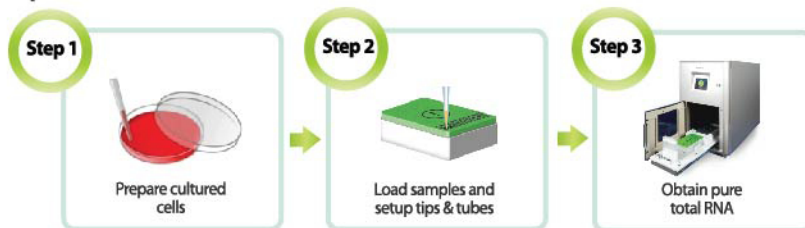


a) Electrophoresis result using LabChip® GX(Caliper Life science) with extracted total RNA from rat liver samples. Average yield is up to 25 µg and RQS(RNA Quality Score) is >9.5.

b) Real time RT-PCR results using Exicycler™ 96 Real-Time Quantitative Thermal Block(A-2060).

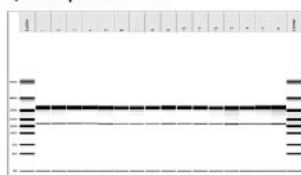
2. Total RNA Extraction from Cultured cells

• Experimental Procedure

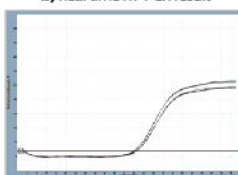


• Experimental Results

a) Electrophoresis result



b) Real time RT-PCR result



a) Electrophoresis result using LabChip® GX(Caliper Life science) with extracted total RNA from HeLa cell (1X10⁶cells) samples. Average yield is up to 10 µg and RQS(RNA Quality Score) is >9.5.

b) Real time RT-PCR results using Exicycler™ 96 Real-Time Quantitative Thermal Block(Cat.No. A-2060).

Ordering Information

Product	Cat. No.	Product	Cat. No.
ExiProgen™ Tissue total RNA kit, 96 reactions	K-4342	ExiProgen™ Viral RNA Kit, 96 reactions	K-4373
ExiProgen™ Plant total RNA kit, 96 reactions	K-4344	ExiProgen™ Viral DNA/ RNA Kit, 96 reactions	K-4371

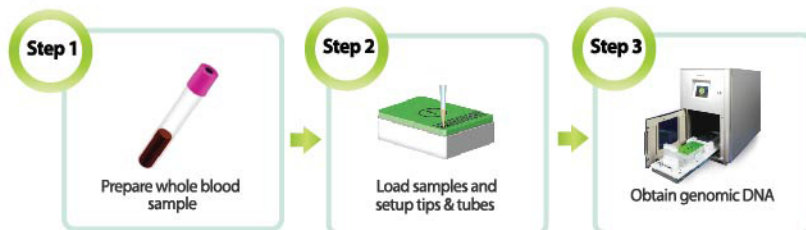
ExiProgen™ - Automated DNA Extraction System ●●●

Features and Benefits

- All reagents and enzymes necessary for genomic DNA extraction are contained within the pre-filled Buffer Cartridges.
- The DNase-free disposable filter tips, elution tubes and other consumables are contained within the kit packaging for added convenience.
- Genomic DNA can be extracted from 1 to up to 16 samples simultaneously.
- Silica magnetic particles developed in-house with Bioneer technology (Korea Patent No. 10-1053023) for unparalleled performance.
- Top-notch reproducibility by using an automated extraction system (ExiProgen™).

1. Genomic DNA Extraction from Whole blood

• Experimental Procedure

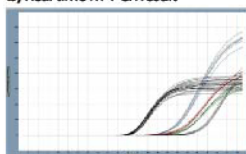


• Experimental Results

a) Electrophoresis result



b) Real time RT-PCR result

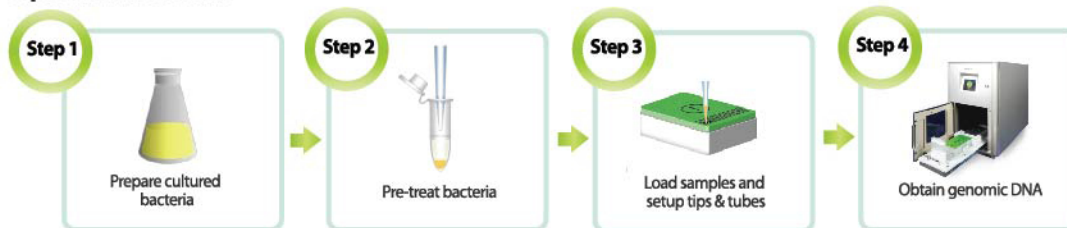


a) Electrophoresis result using 1% agarose gel with extracted genomic DNA from 200 μ l of whole bloods. Odd numbers - extracted samples from whole blood and even numbers, extracted samples from D.W. only. Average yield is up to 3-5 μ g and purity ($A_{260/280}$) is >1.8.

b) Real time PCR results using Exicycler™ 96 Real-Time Quantitative Thermal Block (A-2060).

2. Genomic DNA Extraction from Bacterial cells

• Experimental Procedure

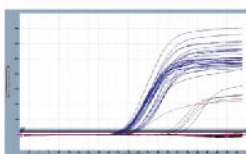


• Experimental Results

a) Electrophoresis result



b) Real time RT-PCR result



a) Electrophoresis result using 1% agarose gel with extracted genomic DNA from *E.coli* cells (1×10^9 cells). Odd numbers - extracted samples from *E.coli* cells and even numbers, extracted samples from D.W. only. Average yield is up to 10 μ g and purity ($A_{260/280}$) is >1.8.

b) Real time PCR results using Exicycler™ 96 Real-Time Quantitative Thermal Block (Cat. No. A-2060).

Ordering Information

Product	Cat. No.	Product	Cat. No.
ExiProgen™ Tissue Genomic DNA Kit, 96 test	K-4312	ExiProgen™ Plant Genomic DNA Kit, 96 test	K-4315
ExiProgen™ Viral DNA/ RNA Kit, 96 test	K-4371	ExiProgen™ Viral DNA Kit, 96 test	K-4372
ExiProgen™ Bacteria Genomic DNA Kit, 96 test	K-4314		

ExiProgen™ - Automated Protein Synthesis and Nucleic Acid Extraction System ●●●



- The world's first system capable of expressing and purifying protein in addition to extraction of nucleic acids.
- Obtain up to 100 µg of >90% pure protein within 6 hours.
- Accelerate protein experiments by expressing and purifying up to 16 proteins simultaneously.
- The pre-installed protocols are optimized for protein expression and purification or nucleic acid extraction, for top-notch reproducibility.
- The compact footprint allows installation almost anywhere in the lab.
- The temperature-controlled heating block allows optimum reaction conditions for every type of experiment.
- The cooling block allows stable storage of the purified protein.

Patents

1. Korea patent no.10-2011-0041126 2. PCT application no. PCT/KR2011/003245

Specification

Dimensions (W X H X D)	320 mm x 500 mm x 535 mm
Weight	27 kg
Temperature range	15-30 °C
Humidity range	20 - 80%, no condensation
Operating system	Built-in
User interface	320 x 240 touch screen graphic LCD
Input voltage	100 - 240 VAC
Frequency	50 / 60 Hz
UV sterilization	5 minute cycle, 48.96 mJ/cm energy max 2
Power supply	24 VDC, 7.5 A(180 W)
Communications	TCP/IP
Heating block	30 - 90 °C
Cooling block	4 - 10 °C
Max. number of samples per run	1-16 samples per run
Reaction time	Protein expression & purification: ~ 6 hr/ Nucleic acid extraction: ~1 hr 30 min.

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