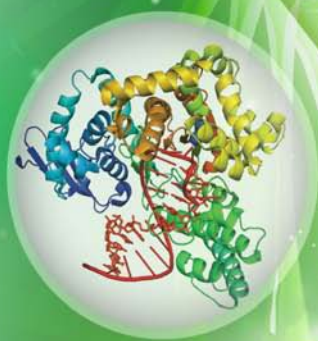


Bioneer

Healthier Future for
Humanity with
Genomic Technology

ExiProgen™

Fully Automated Protein Synthesis and Nucleic Acid Extraction System



World's First, Fully Automated System for Protein Synthesis and Nucleic Acid Extraction

- ExiProgen™ (Instrument)
- Function I : Automatic Protein Synthesis
- Function II : Automatic Protein Purification
- Function III : Automatic Nucleic Acid Extraction
- Ordering Information

ExiProgen™ (Instrument)**Features and Benefits**

- World's First, Fully Automated System for Protein Synthesis and Nucleic Acid Extraction
- 16 simultaneous reactions of protein synthesis and nucleic acid extraction
- Optimized protocols for each experiment provide reproducible results
- Temperature Controlled Block allows 4 to 90°C temperature change
- Magnet Block enables high-purity, high-efficiency protein purification and nucleic acid extraction
- Contamination Shield prevents well-to-well cross contamination caused by pipetting
- Touch screen maximizes user convenience through easy operation as well as real-time confirmation of experiment progress
- Automatic UV lamp sterilizes the inside of the instrument both before and after the experiment

Patents

- KR 10-2011-0041126, 10-2012-0090149, 10-2012-0138335, 10-2013-0152613
- PCT/KR2011/003245, PCT/KR2013/011022

Specification

Dimensions (W x H x D)	320 mm x 500 mm x 535 mm
Weight	27 kg
Usage environment	temperature 15-30°C / humidity 20-80%, no condensation
User interface	320 x 240 touch screen graphic LCD, 18bit color
Voltage	100 – 240 VAC, 50 / 60 Hz
Network	TCP/IP protocol
Magnet & Heating Block	30-90°C
Temperature Controlled Block	4-90°C

Function I : Automatic Protein Synthesis

ExiProgen™ protein synthesis kits perform cell-free protein synthesis in a reaction tube from template DNA such as T7 expression vector inserted with target gene and 6X His-tag sequences.

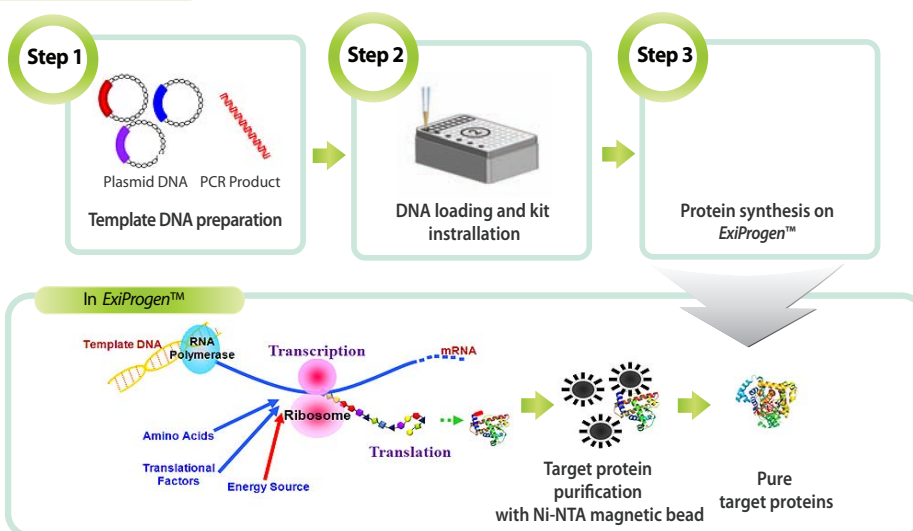
ExiProgen™ kits for protein synthesis

Target	Available kit
His-tagged protein	ExiProgen™ EC Protein Synthesis Kit
Small scale	ExiProgen™ EC-Maxi Protein Synthesis Kit
Large scale	ExiProgen™ EC-Tagfree Protein Synthesis Kit
Natural protein	ExiProgen™ EC-Disulfide Protein Synthesis Kit
Disulfide bonded protein	

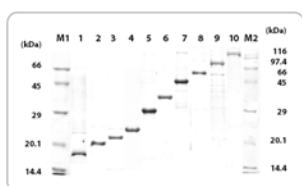
Features and Benefits

- Install an ExiProgen™ kit with template DNA into the instrument, and you can get a purified target protein
- Synthesize enzymes, growth hormones, antibodies, and even toxic proteins using ExiProgen™
- Synthesize various size, 8-to-16 different proteins simultaneously
- You can obtain 10~120 kDa proteins from plasmid DNA as template DNA and 10~60 kDa from PCR product
- Provide a reproducible results by minimizing human intervention
- Reduce variation between reactions

Procedure



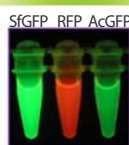
Experimental Data



SDS-PAGE data of various proteins synthesized from plasmid DNA.

M1: AccuLadder™ Protein Size Marker (Low),
 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),
 M2: AccuLadder™ Protein Size Marker (Broad)

Fluorescent Proteins



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

MMLV Reverse Transcriptase

M NC1 NC2 Sample
 Amplification of GAPDH(500 bp) of Human total RNA with MMLV RTase was synthesized with ExiProgen™.
 M: 100 bp DNA Ladder,
 NC1: Negative Control 1 (No-RNA),
 NC2: Negative Control 2 (No-enzyme),
 Sample: 10 ng Human total RNA from HeLa cell.

Function II : Automatic Protein Purification ●●●

ExiProgen™ protein purification kits contains patented, Ni-NTA-coated silica magnetic beads, which purify target proteins containing His-tag from cell culture or cell lysate.

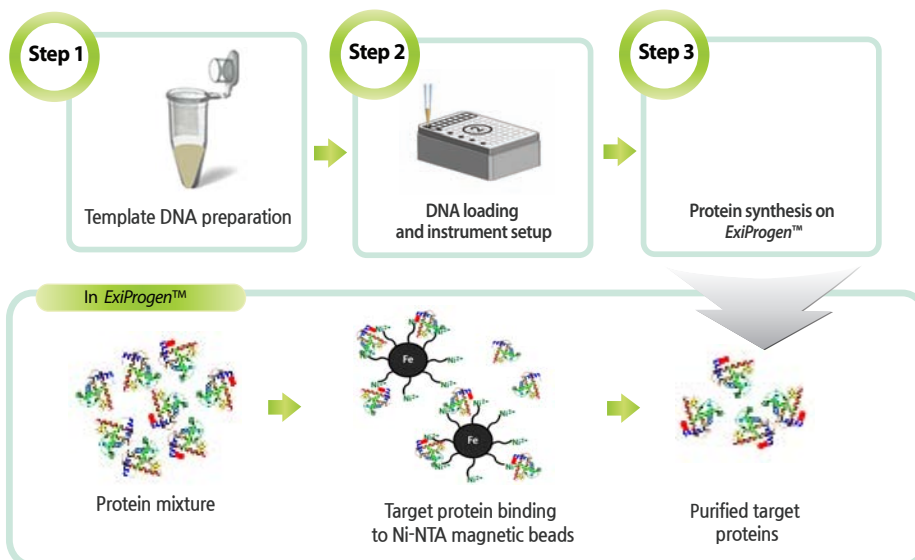
ExiProgen™ kits for protein purification

Sample type	Available kit
Bacteria sample	ExiProgen™ His-tagged Protein Purification Kit
<i>In vitro</i> expression sample	
Eukaryotic sample	ExiProgen™ Cell-Based Protein Purification Kit

Features and Benefits

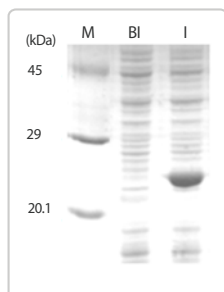
- Purify recombinant proteins expressed *in vivo* or *in vitro*
- Supplied pre-filled cartridge for protein purification. Just prepare cell lysate or cell-free expressed protein sample
- Provide 8 to 16 different proteins simultaneously purified in high purity of more than 90%

Procedure



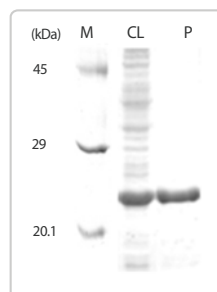
Experimental Data

Preparation of expressed target proteins



Recombinant *E. coli* cell with expressed of DUSP3
M: AccuLadder™ Protein Size Marker (Low),
BI: Pre-induction sample,
I: Post-Induction sample.

Protein purification with ExiProgen™



Purification of DUSP3 with ExiProgen™
M: AccuLadder™ Protein Size Marker (Low),
CL: Sample of recombinant cell lysate,
P: Sample of purification.

Function III : Automatic Nucleic Acid Extraction

ExiProgen™ nucleic acid extraction kits extract nucleic acids using patented silica magnetic beads only by three steps: sample preparation, sample injection and instrument setup, and nucleic acid extraction.

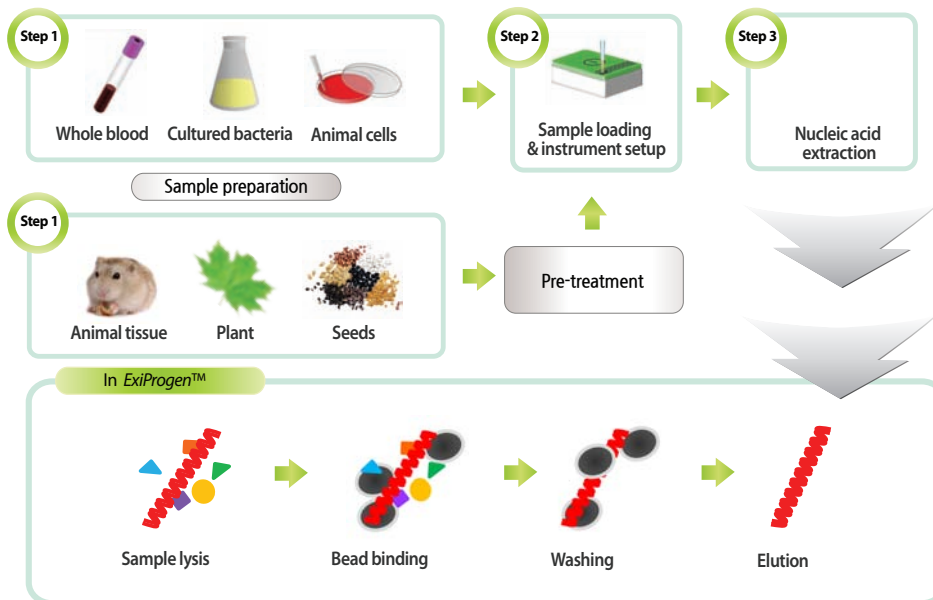
ExiProgen™ kits for nucleic acid extraction

Target	Sample type	Available kit
Genomic DNA	Whole blood, Tissue, Bacteria	ExiProgen™ Blood/Tissue/Plant/Bacteria Genomic DNA Kit
Fragment DNA	Plasmid DNA, PCR product, Gel	ExiProgen™ Semi-Auto/Full-Auto Plasmid DNA Kit
		ExiProgen™ PCR Purification Kit
		ExiProgen™ Gel Extraction Kit
Total RNA	Plant	ExiProgen™ Plant total RNA Kit
Virus DNA/RNA	Serum, Plasma, Cell-free body fluid	ExiProgen™ Viral DNA/RNA Kit

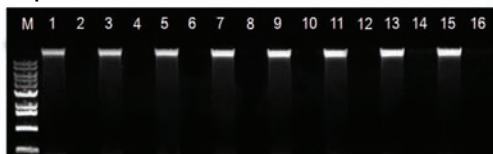
Features and Benefits

- Supplied with pre-filled cartridges containing all the necessary enzymes and reagents for nucleic acid extraction
- Extracts nucleic acids from 1 to 16 samples simultaneously
- Provide reproducible results with ExiProgen™
- Optimized buffers and pretreatment protocols for various samples
- Optimized buffers for a broad range of DNA fragment sizes

Procedure



Experimental Data



Genomic DNA purification from *E. coli* cell (1×10^9 cells)

Genomic DNA was extracted from 1×10^9 of *E. coli* cells using ExiProgen™ Bacteria Genomic DNA Kit followed by agarose gel electrophoresis. *E. coli* cells were added to every other well with blanks in between the samples containing only water in order to monitor cross-contamination during the automated process in ExiProgen™. No cross-contamination was observed during the process and the average yield was $10 \mu\text{g}$, $A_{260/280} \text{ nm} > 1.8$.

Ordering information

Instrument	Cat. no.	Size
ExiProgen™	A-5041	
Protein Synthesis & Purification Kits	Cat. no.	Size
ExiProgen™ EC Protein Synthesis Kit	K-7300, 7301, 7302	16, 32, 96 reactions
ExiProgen™ EC-Maxi Protein Synthesis Kit	K-7310	8 reactions
ExiProgen™ EC-Tagfree Protein Synthesis Kit	K-7320	8 reactions
ExiProgen™ EC-Disulfide Protein Synthesis Kit	K-7330	8 reactions
ExiProgen™ His-tagged Protein Purification Kit	K-7220, K-7221	16, 32 reactions
ExiProgen™ Cell-Based Protein Purification Kit	K-7230	16 reactions
Nucleic acid Extraction Kits	Cat. no.	Size
ExiProgen™ Blood Genomic DNA Kit	K-4311	96 reactions
ExiProgen™ Tissue Genomic DNA Kit	K-4312	96 reactions
ExiProgen™ Bacteria Genomic DNA Kit	K-4314	96 reactions
ExiProgen™ Plant Genomic DNA Kit	K-4315	96 reactions
ExiProgen™ Plant total RNA Kit	K-4344	96 reactions
ExiProgen™ Viral DNA/RNA Kit	K-4371	96 reactions
ExiProgen™ Gel Extraction Kit	K-4391	96 reactions
ExiProgen™ PCR Purification Kit	K-4392	96 reactions
ExiProgen™ Semi-Auto Plasmid DNA Kit	K-4381	48 reactions
Related Products & Services	Cat. no.	Size
ExiProgen™ ProXpress PCR Template Kit	K-7400, 7401	16, 32 reactions
pBIVT vector set-1	K-7350	Each 5 µg
AccuRapid™ Cell-Free Protein Expression Kit	K-7250	45 µl x 24 reactions
AccuRapid™ Midi Protein Expression Kit	K-7260	1 ml x 5 reactions
AccuRapid™ Maxi Protein Expression Kit	K-7270	10 ml x 1 reaction
AccuRapid™ Protein Synthesis Kit	K-7280	5 reactions
AccuPrep® PCR Purification Kit	K-3034-1, 3034	50, 200 reactions
AccuPrep® Gel Purification Kit	K-3035-1, 3035	50, 200 reactions
AccuPrep® Nano-Plus Plasmid Mini Extraction Kit	K-3112, 3111	50, 200 reactions
AccuPrep® Nano-Plus Plasmid Midi Extraction Kit	K-3122	25 reactions
AccuPrep® Nano-Plus Plasmid Maxi Extraction Kit	K-3132, 3131	10, 25 reactions
AccuPrep® Plasmid Mini Extraction Kit	K-3030-1, 3030	50, 200 reactions
AccuLadder™ 100 bp DNA Ladder	D-1030	250 µl (135 ng/µl)
AccuLadder™ 1kb DNA Ladder	D-1040	500 µl (130 ng/µl)
AccuLadder™ Protein Size Marker (Low)	D-2020	500 µl
AccuLadder™ Protein Size Marker (Broad)	D-2010	500 µl
Gene Synthesis Service	S-2041	—
Protein Expression & Synthesis Service	—	—
Gene to Protein Service	—	—

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