Product Catalog

YEASTERN BIOTECH

Timesaving

Easy

Accurate

MISSION

We are a Taiwan based molecular biology kits & reagents manufacturer which was founded in 2000 with the goal of providing the intelligent technical services and high quality products in life sciences and in the biomedical industry. We believe that a scientist's greatest help comes from fellow scientists. Therefore, our innovative interdisciplinary research team with highly qualified experts in different fields offers ODM or OEM research-only reagents and kits as well as diagnostic products.

AIM & PROSPECT

The spirits of innovation, integration and humanism in biotechnology are our executive prospects. Based on our possession of excellent research capability and professional technical platforms, we head for long-term aims at developing our own brand of life science and biomedical products.

STRATEGY

We are ISO9001, ISO13485 & GMP certified. Our guideline for product development is to offer time-saving, easy, and accurate (T.E.A.) products to meet our customers' needs. To promote our products and technical services, we strive towards establishing strategic alliance and collaboration with our distributors. We believe we are making impacts on the global biotech market with our innovative products and technology through sustainable and mutual partnership.

ISO 9001 | ISO 13485

Yeastern Biotech Co., Ltd.
www.yeastern.com | yeastern@yeastern.com

DNA/RNA EXTRACTION

PCR, RT-PCR & dNTPs

GENE CLONING

PROTEOMICS

OEM SERVICES & APPENDIX

DNA/RNA Extraction

UniversAll™ Tissue Extraction/PCR Kits

-20ºC

 # FYU002-5ML/50ML
UniversAll™ Plants Tissue Extraction Buffer

 # FYU003-20ML
UniversAll™ Animal Tissue Extraction Buffer

 # FYU009-5ML/20ML
UniversAll™ Robuster Extraction Buffer

Description

The UniversAll™ Tissue PCR Kits contain all the reagents necessary to rapidly extract genomic DNA from a wide range of biological samples prior to amplifying targets of interest by PCR. Genomic DNA is extracted from a small amount of samples simply by incubation in UniversAll™ Extract buffer for 10 minutes at 95 °C. The UniversAll™ Tissue PCR Kits offer a novel one-step UniversAll™ Extract buffer that eliminates the need for freezing cells or tissues with liquid nitrogen, mechanical disruption, organic extraction, column DNA purification, or alcohol precipitation.

Features

- **Simple:** single-step extraction of genomic DNA prior to PCR. No phenol/chloroform.
- **Fast:** cells or tissues to PCR in 10 minutes.
- **Convenient:** includes our superior PCR enzymes and buffers for amplification directly from the extract for your convenience.

Applications

- Gene cloning
- Small or large scale PCR-based genotyping
- Traditional PCR; real-time PCR
- Suitable for rapid forensic and disease detection and diagnosis

Quality Control

Each lot of extraction buffer was tested for its extraction capability of standard animal and plant tissues for PCR and real-time PCR. It also has to pass the stability test before shipping.

Results

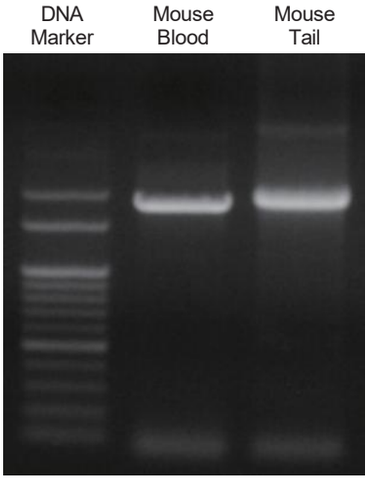
PCR analysis of genomic DNA extracted from 11 plant leaf tissues and seeds of 4 plant species with the P18S primer set.

Related Products

- YEA Ladder DNA Markers 1-12
- YEAtaq DNA Polymerase 2-1
- RealStart DNA Polymerase Premix 2-2
- EZtime Real-Time PCR Premix 2-3
- EZtime LAMP Premix (2X) 2-9
- Deoxynucleotides (dNTPs) 2-10

Mouse Tissue

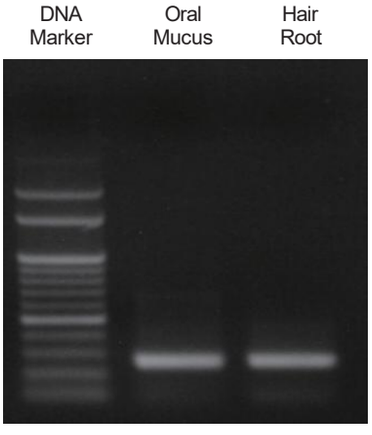
PCR analysis of genomic DNA extracted from ICR mouse blood and tail with a U18S primer set.



* Put 2 µl of mouse blood and a small piece (~1 mm^3) of mouse tail tip, respectively, into microcentrifuge tubes then extracted with UniversAll™ buffer.

Human Tissue

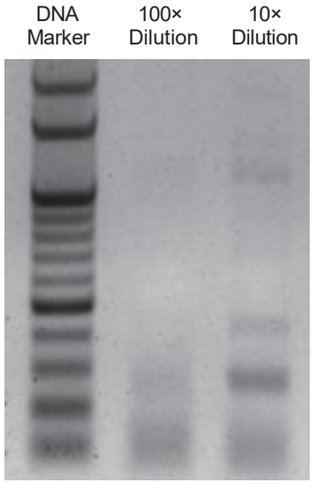
PCR analysis of genomic DNA extracted from human oral mucosal cells and human hair with a β-GBN primer set.



* Placed oral mucosal cells and three hair root ends into microcentrifuge tubes then extracted with UniversAll™ buffer.

Paraffin Sample

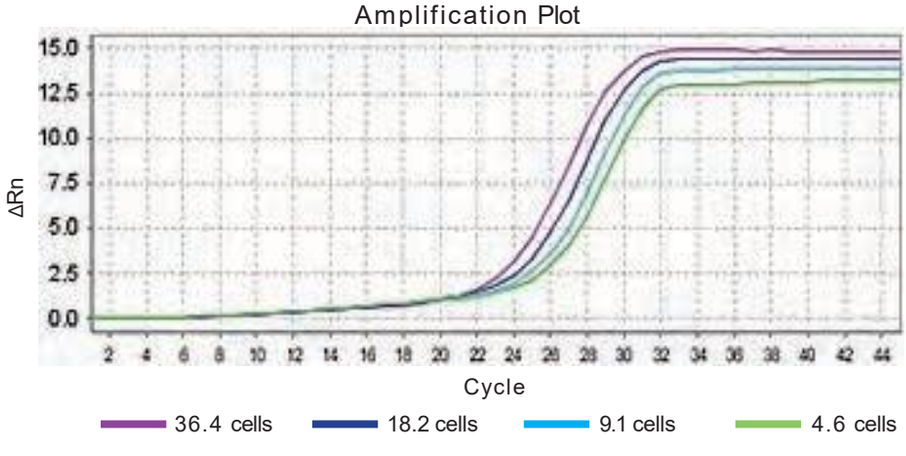
Genomic DNA extracted from paraffin embeded mouse liver with a β-GBN primer set.



* Samples were cut into small pieces, pre-washed with xylene and alcohol then extracted with UniversAll™ buffer.

Real-time Quantitative PCR

Real-time quantitative PCR analysis of *E. coli* plasmid DNA extracted by UniversAll™ extraction buffer.



* As few as 4.6 cells in the sample can be detected easily.

DR Keeper Nucleic Acid Stabilizer

RT

 # FYU201-100ML
DR Keeper Nucleic Acid Stabilizer Solution

Description

DR Keeper Nucleic Acid Stabilizer is a non-toxic tissue and cell storage solution to stabilize and protect DNA/RNA for later isolation or shipping without refrigeration. It penetrates into tissue pieces or cells rapidly to inactivate RNase and keeps RNA intact. It allows recovery of high quality and quantity of RNA from tissue pieces or cells stored in DR Keeper Nucleic Acid Stabilizer for 1 month at 4°C, 1 week at 25°C or 1 day at 37°C. For long-term storage, tissue pieces or cells can be stored at -20°C. The yellow color of DR Keeper Nucleic Acid Stabilizer indicates the mild acidic condition which protects RNA from nucleophilic attack.

Features

- Preserves RNA at ambient temperatures without degradation
- Penetrates into tissue pieces or cells to stabilize RNA immediately
- Excellent for field sample collection
- Non-toxic and environmental friendly
- Minimizes the usage of liquid N_2
- Eliminates the need to store RNA in freezers or to ship by dry ice
- Compatible with most downstream applications (ex: TRIzol® reagent)

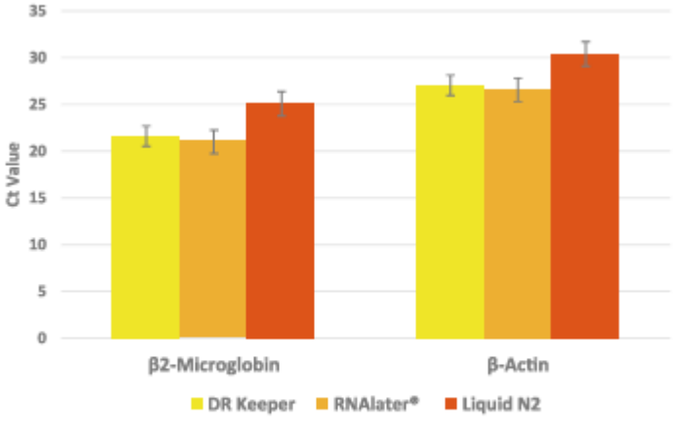
Applications

- DNA preservation of animal tissues, plant tissues, cells
- RNA preservation of animal tissues, plant tissues, cells

Quality Control

DR Keeper Nucleic Acid Stabilizer Solution undergoes quality assurance test to verify that its composition is invariant from lot to lot. RNase digestion assay is performed to ensure its function to protect RNA from degradation.

Results



Q-PCR Result of Mouse Liver's House Keeping Genes stored in different RNA Preservation Reagent for 7 Days in 37°C

Related Products

- YEA Ladder DNA Markers 1-12
- YEAtaq DNA Polymerase 2-1
- RealStart DNA Polymerase Premix 2-2
- EZtime Real-Time PCR Premix 2-3
- EZtime LAMP Premix (2X) 2-9
- Deoxynucleotides (dNTPs) 2-10

HiYield Plasmid Mini Kit 3.0

Description

HiYield Plasmid Mini Kit 3.0 is specially designed for rapid isolation of plasmid or cosmid DNA from 1-5 ml of bacterial cultured cells. As high as 40 µg of high quality plasmid DNA can be purified in less than 30 minutes and is ready for restriction digestion, ligation, PCR, and sequencing reaction.

No phenol extraction or alcohol precipitation is required in this protocol. In the process, clear and extra pure cell lysate with minimal genomic DNA and RNA contaminants can be obtained through the modified alkaline lysis method and RNase treatment. In the presence of a chaotropic salt, the plasmid DNA within the lysate will then bind to the glass fiber matrix equipped in the spin column. The contaminants are washed away with an ethanol-containing wash buffer. Finally, the purified plasmid DNA is eluted by a low salt elution buffer or distilled water. Typical yields of high-purity are 20~40 µg for high-copy number plasmids or 3~10 µg for low-copy number plasmids.

Features

- **Sample :** 1-5 ml of bacterial cells
- **Format :** spin column (centrifuge)
- **Yield :** up to 40 µg of plasmid/cosmid DNA
- **Operation time :** up to 30 minutes
- **Elution volume :** 30-50 µl

Applications

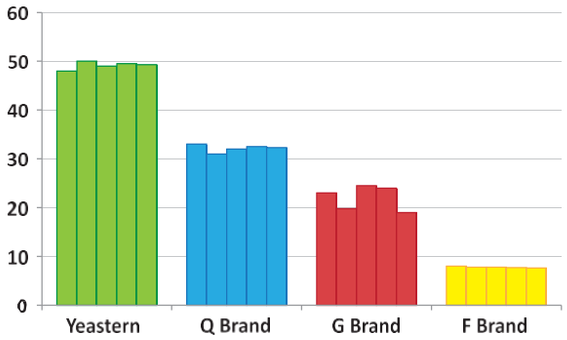
Restriction enzyme digestion, library screening, ligation, PCR, transformation/ sequencing reactions

Quality Control

The quality of HiYield Plasmid Mini Kit 3.0 is tested on a lot-to-lot basis. The kit is tested by isolation of plasmid DNA from 5 ml culture of *E. coli* DH5α transformed with the plasmid pGAD424 (A_{600}>2 units/ml). More than 40 µg of plasmid DNA should be obtained. One µg of the purified product is also tested for restriction enzyme digested with *EcoR* I followed by agarose gel analysis.

Results

Performance of Yeastern Biotech's
HiYield Plasmid Mni Kit 3.0



Sample : *E. coli* DH5α
Plasmid : GAD424 (6.6 kb)
Preparation : 16 hours overnight LB culture, 5 ml for each preparation

RT

 # FYG011-100P (100 preps)

PN1 Buffer (PS1)	25 mL
PN2 Buffer (PS2)	25 mL
PN3 Buffer (PS3)	35 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
RNase A (50 mg/mL)	50 µl
PN Column (PS)	100 pcs
Collection Tube	100 pcs

 # FYG011-300P (300 preps)

PN1 Buffer (PS1)	65 mL
PN2 Buffer (PS2)	65 mL
PN3 Buffer (PS3)	95 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
RNase A (50 mg/mL)	150 µl
PN Column (PS)	300 pcs
Collection Tube	300 pcs

Related Products

- YEA Ladder DNA Markers 1-12
- YEAtaq DNA Polymerase 2-1
- RealStart DNA Polymerase Premix 2-2
- EZtime Real-Time PCR Premix 2-3
- Deoxynucleotides (dNTPs) 2-10
- ECOS™ Competent cells 3-1
- T&A Cloning Kit 3-14

HiYield Gel/PCR DNA Fragments Extraction Kit 2.0

RT

 # FYG206-100 (100 preps)

GP Buffer	60 ml
W1 Buffer	45 ml
W2 Buffer	15 ml
Elution Buffer	10 ml
GP Column	100 pcs
Collection Tube	100 pcs

 # FYG206-300 (300 preps)

GP Buffer	80 ml x2
W1 Buffer	125 ml
W2 Buffer	25 ml x2
Elution Buffer	30 ml
GP Column	300 pcs
Collection Tube	300 pcs

Description

The HiYield Gel/PCR DNA Fragments Extraction Kit 2.0 is designed to recover or concentrate DNA fragments (50 bp-10 kb) from agarose gels in 20 mins, PCR or other enzymatic reactions. The unique dual purpose application and high yield mini columns make this kit valuable. The method uses a chaotropic salt, guanidine thiocyanante to dissolve agarose gel and denature enzymes. DNA fragments in chaotropic salt solution bind to the glass fiber matrix of the spin column. Following washing off contaminants, the purified DNA fragments (Effective Binding Capacity Approx: 20 ug) are eluted by addition of low salt elution buffer or water. Salts, enzymes and unincorporated nucleotides are effectively removed from reaction mixtures without phenol extraction or alcohol precipitation.

Features

- **Recovery :** Up to 95%
- **Operation time :** within 20 minutess

Sample

100 µl PCR Product, 300 mg of Agarose Gel

Applications

Fluorescent/radioactive sequencing, PCR, restriction enzyme digestion, DNA labeling and ligation

Genomic DNA Extraction Mini Kit (Blood and Urine)

RT

 # FYG109-100 (100 preps)

BU1 Buffer(B1)	100 ml
BU2 Buffer(B2)	35 ml
BU3 Buffer(BC)	45 ml
W1 Buffer	45 ml
W2 Buffer	15 ml
Elution Buffer	10 ml
BU Column(BZ)	100 pcs
Collection Tube	100 pcs

Description

The Genomic DNA Extraction Mini Kit (Blood and Urine) is designed for rapid extraction of pure genomic DNA from Bacteria and fungus cell. Efficiently remove cellular debris and inhibitors, this kit using column-type tube in purification process through three simple steps of binding, washing and then elution for the safe and convenient extraction of high-purity genomic DNA. The entire process can be completed in less than 1 hour without phenol/chloroform, and the final product can be used in PCR or other downstream experiments.

Features

- **Format :** spin column (centrifuge)
- **Yield :** up to 50 µg

Sample

310^9 Bacteria, 5 x 10^7 Fungus cells

Applications

PCR, AFLP/PADP, RFLP, Southern blot, real-time PCR

Genomic DNA Extraction Kit (Tissue) 2.0

Description

The Genomic DNA Extraction Kit (Tissue) 2.0 is designed for rapid extraction of pure genomic DNA from animal tissue or paraffin-embedded tissue. Efficiently remove cellular debris and inhibitors, this kit using column-type tube in purification process through three simple steps of binding, washing and then elution for the safe and convenient extraction of high-purity genomic DNA. The entire process can be completed in less than 1 hour without phenol/chloroform, and the final product can be used in PCR or other downstream experiments

Features

- **Format :** spin column (centrifuge)
- **Yield :** up to 50 μg

Sample

330 mg of fresh animal tissue, 25 mg of paraffin-embedded tissue

Applications

PCR, AFLP/PADP, RFLP, Southern blot, real-time PCR

RT

 # FYG111-100 (100 preps)

TI1 Buffer (T1)	35 mL
TI2 Buffer (T2)	12 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
TI Column (GZ)	100 pcs
Collection Tube	100 pcs

 # FYG111-300 (300 preps)

TI1 Buffer (T1)	95 mL
TI2 Buffer (T2)	35 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
TI Column (GZ)	300 pcs
Collection Tube	300 pcs

Genomic DNA Extraction Kit (Plant) 2.0

Description

The Genomic DNA Extraction Kit (Plant) 2.0 is designed for rapid extraction of pure genomic DNA from plant tissue or dry plant tissue. Efficiently remove cellular debris and inhibitors, this kit using column-type tube in purification process through three simple steps of binding, washing and then elution for the safe and convenient extraction of high-purity genomic DNA. The entire process can be completed in less than 1 hour without phenol/chloroform, and the final product can be used in PCR or other downstream experiments

Features

- **Format :** spin column (centrifuge)
- **Yield :** up to 50 μg

Sample

100 mg of fresh plant tissue, 50 mg of dry plant tissue

Applications

PCR, AFLP/PADP, RFLP, Southern blot, real-time PCR

RT

 # FYG112-100 (100 preps)

PL Buffer (PZ)	55 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
PL Column (GZ)	100 pcs
Collection Tube	100 pcs

 # FYG112-300 (300 preps)

PL Buffer (PZ)	125 + 30 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
PL Column (GZ)	300 pcs
Collection Tube	300 pcs

Genomic DNA Extraction Kit (Bacteria/Fungi) 2.0

RT

 # FYG115-100 (100 preps)

BF1 Buffer (N1)	20 mL
BF2 Buffer (N2)	35 mL
BF3 Buffer (N3)	45 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
BF Column (GZ)	100 pcs
Collection Tube	100 pcs

Description

The Genomic DNA Extraction Kit (Bacteria/Fungi) 2.0 is designed for rapid extraction of pure genomic DNA from Bacteria and fungus cell. Efficiently remove cellular debris and inhibitors, this kit using column-type tube in purification process through three simple steps of binding, washing and then elution for the safe and convenient extraction of high-purity genomic DNA. The entire process can be completed in less than 1 hour without phenol/chloroform, and the final product can be used in PCR or other downstream experiments.

Features

- **Format :** spin column (centrifuge)
- **Yield :** up to 50 µg

Sample

10^9 Bacteria, 5 x 10^7 Fungus cells

Applications

PCR, AFLP/PADP, RFLP, Southern blot, real-time PCR

Genomic DNA Extraction kit (Cultured Cell) 2.0

RT

 # FYG117-100 (100 preps)

CC1 Buffer (N1)	20 mL
CC2 Buffer (N2)	35 mL
CC3 Buffer (N3)	45 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
CC Column (GZ)	100 pcs
Collection Tube	100 pcs

 # FYG117-300 (300 preps)

CC1 Buffer (N1)	20 mL
CC2 Buffer (N2)	95 mL
CC3 Buffer (N3)	125 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
CC Column (GZ)	300 pcs
Collection Tube	300 pcs

Description

The Genomic DNA Extraction kit (Cultured Cell) 2.0 is designed for rapid extraction of pure genomic DNA from Cultured Cell. Efficiently remove cellular debris and inhibitors, this kit using column-type tube in purification process through three simple steps of binding, washing and then elution for the safe and convenient extraction of high-purity genomic DNA. The entire process can be completed in less than 1 hour without phenol/chloroform, and the final product can be used in PCR or other downstream experiments.

Features

- **Format :** spin column (centrifuge)
- **Yield :** up to 50 µg

Sample

10^7 Cultured Cell

Applications

PCR, AFLP/PADP, RFLP, Southern blot, real-time PCR

Total RNA kit (Cell/Blood)

Description

The Total RNA kit (Cell/Blood) is designed specifically for purifying total RNA from fresh whole human blood and cultured cells. Detergents and a chaotropic salt are used to lyse cells and inactivate RNase. RNA in the chaotropic salt is bound to the glass fiber matrix of the spin column and once any contaminants have been removed using the Wash Buffer, the purified total RNA is eluted by the Elution Buffer.

Features

- **Format :** spin column (centrifuge)
- **Yield :** Up to 30 µg

Sample

10^7 x Culture Cells, 300 µl of blood

Applications

RT-PCR, Northern blotting, primer extension, mRNA selection cDNA synthesis

RT

 # FYG310-100 (100 preps)

CBR1 Buffer (CR1)	110 mL
CBR2 Buffer (CR2)	45 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
CBR Column (RZ)	100 pcs
Collection Tube	100 pcs

 # FYG310-300 (300 preps)

CBR1 Buffer (CR1)	110 * 3 mL
CBR2 Buffer (CR2)	125 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
CBR Column (RZ)	300 pcs
Collection Tube	300 pcs

Total RNA kit (Blood/ Bacteria)

Description

The Total RNA kit (Blood/ Bacteria) is designed specifically for purifying total RNA from fresh whole human blood and Bacteria. Detergents and a chaotropic salt are used to lyse cells and inactivate RNase. RNA in the chaotropic salt is bound to the glass fiber matrix of the spin column and once any contaminants have been removed using the Wash Buffer, the purified total RNA is eluted by the Elution Buffer.

Features

- **Format :** spin column (centrifuge)
- **Yield :** Up to 30 µg

Sample

10^9 x Bacteria Cells, 300 µl of blood

Applications

RT-PCR, Northern blotting, primer extension, mRNA selection cDNA synthesis

RT

 # FYG306-100 (100 preps)

BFR1 Buffer (BRO)	20 mL
BFR2 Buffer (BRA)	45 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
BFR Column (RZ)	100 pcs
Collection Tubes	100 pcs

 # FYG306-300 (300 preps)

BFR1 Buffer (BRO)	60 mL
BFR2 Buffer (BRA)	65 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
BFR Column (RZ)	300 pcs
Collection Tubes	300 pcs

Total RNA Kit (Tissue) 2.0

RT

 # FYG307-100 (100 preps)

TIR Buffer (TR)	45 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
TIR Column (RZ)	100 pcs
Collection Tube	100 pcs

 # FYG307-300 (300 preps)

TIR Buffer (TR)	125 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
TIR Column (RZ)	300 pcs
Collection Tube	300 pcs

Description

The Total RNA Kit (Tissue) 2.0 is designed specifically for purifying total RNA from ffresh animal tissue or paraffin-embedded tissue. Detergents and a chaotropic salt are used to lyse cells and inactivate RNase. RNA in the chaotropic salt is bound to the glass fiber matrix of the spin column and once any contaminants have been removed using the Wash Buffer, the purified total RNA is eluted by the Elution Buffer.

Features

- **Format :** spin column (centrifuge)
- **Yield :** Up to 30 µg

Sample

30 mg of fresh animal tissue, 25 mg of paraffin-embedded tissue

Applications

RT-PCR, Northern blotting, primer extension, mRNA selection cDNA synthesis

Total RNA Kit (Plant) 2.0

RT

 # FYG308-100 (100 preps)

PLR Buffer (PR)	110 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
PLR Column (RZ)	100 pcs
Collection Tube	100 pcs

 # FYG308-300 (300 preps)

PLR Buffer (PR)	105 * 3 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
PLR Column (RZ)	300 pcs
Collection Tube	300 pcs

Description

The Total RNA Kit (Plant) 2.0 is designed specifically for purifying total RNA from plant tissue or dry plant tissue. Detergents and a chaotropic salt are used to lyse cells and inactivate RNase. RNA in the chaotropic salt is bound to the glass fiber matrix of the spin column and once any contaminants have been removed using the Wash Buffer, the purified total RNA is eluted by the Elution Buffer.

Features

- **Format :** spin column (centrifuge)
- **Yield :** Up to 30 µg

Sample

100 mg of plant Tissue, 25 mg of dry plant Tissue

Applications

RT-PCR, Northern blotting, primer extension, mRNA selection cDNA synthesis

miRNA Isolation Kit 2.0

Description

The miRNA Isolation Kit 2.0 is designed for purifying micro RNAs (miRNAs) and other small cellular RNAs from whole blood, cultured cells, bacteria (Gram +/-), fungus cells and tissue. Standard protocols for isolating total RNA and mRNA are not optimized for isolation of small RNA molecules and result in the loss of substantial amounts of miRNAs and other small RNA. In addition, removal of the predominantly lager RNAs is required for accurate analysis of miRNA expression by qPCR or microarray analysis. This kit ensures purification of small RNA with minimal contamination from large RNA molecules or genomic DNA. In the presence of a chaotropic salt, and various ethanol concentrations in the solvent, RNA molecules (of various sizes) are selectively bound to the glass fiber matrix.

Features

- **Format :** spin column (centrifuge)
- **Yield :** Up to 20 µg

Sample

500 µl Whole Blood, 10^6 Cultured Cells, 10^8 Bacteria (Gram +/-), $5x10^6$ fungus cells, 10 mg Tissue

Applications

Northern blot analysis, quantitative, real-time RT-PCR, microarray analysis

RT

 # FYG309-050 (50 preps)

PD1 Buffer (PM1)	85 mL
PD2 Buffer (PM2)	85 mL
PD3 Buffer (PM3)	125 mL
W1 Buffer	125 mL + 40 mL
W2 Buffer	25 * 2 mL
Elution Buffer	50 mL
RNase A (50 mg/mL)	200 µl
3M Sodium Acetate	4 mL * 2
PD Column (PM)	20 pcs

Viral Nucleic Acid Extraction Kit 2.0

Description

Viral Nucleic Acid Extraction Kit 2.0 is specially designed for purification of viral RNA or DNA from cell-free samples. With the extraction method included, DNA/RNA viruses are lysed quickly and efficiently by the lysis buffer which is a highly concentrated solution of a chaotropic salt. The lysis buffer and ethanol create appropriate conditions for the binding of nucleic acids to the glass fiber matrix of the blood viral DNA/RNA binding column. Contaminations like salts, metabolites and soluble macromolecular cellular components are removed in the wash steps. The nucleic acids can be eluted in low salt buffer or water and are ready-to-use in subsequent reactions.

Features

- **Format :** spin column (centrifuge)
- **Yield :** Up to 20 µg

Sample

serum, plasma, cell-culture supernatants, other cell-free body fluids

Applications

RT-PCR, PCR, Real-time PCR, Automated fluorescent DNA sequencing, Enzymatic reactions

RT

 # FYG404-050 (50 preps)

VN1 Buffer (VN1)	45 mL
VN2 Buffer (VN2)	6 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
VN Column (VZ)	100 pcs
Collection Tube	100 pcs

 # FYG404-300 (300 preps)

VN1 Buffer (VN1)	125 mL
VN2 Buffer (VN2)	16 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
VN Column (VZ)	300 pcs
Collection Tube	300 pcs

Genomic DNA Extraction Kit (Stool) 2.0

RT

 # FYG113-100 (100 preps)

SS1 Buffer (ST1)	35 mL
SS2 Buffer (ST2)	12 mL
W1 Buffer	45 mL
W2 Buffer	15 mL
Elution Buffer	10 mL
Proteinase K	40 mg
Bead Tube	100 pcs
SS Column (GZ)	100 pcs
Collection Tube	100 pcs

 # FYG113-300 (300 preps)

SS1 Buffer (ST1)	95 mL
SS2 Buffer (ST2)	35 mL
W1 Buffer	125 mL
W2 Buffer	25 * 2 mL
Elution Buffer	30 mL
Proteinase K	40 * 3 mg
Bead Tube	300 pcs
SS Column (GZ)	300 pcs
Collection Tube	300 pcs

Description

The Genomic DNA Extraction Kit (Stool) 2.0 is designed for rapid extraction of pure genomic DNA from stool. Efficiently remove cellular debris and inhibitors, this kit using column-type tube in purification process through three simple steps of binding, washing and then elution for the safe and convenient extraction of high-purity genomic DNA. The entire process can be completed in less than 1 hour without phenol/ chloroform, and the final product can be used in PCR or other downstream experiments

Features

- **Format :** spin column (centrifuge)
- **Yield :** up to 50 µg

Sample

30 mg of stool sample

Applications

PCR, AFLP/PADP, RFLP, Southern blot, real-time PCR

YEA Ladder DNA Markers

Description

The Yeastern Biotech's 1 kb YEA Ladder DNA Marker IV **(FYD011-001)** contains 13 discrete fragments ranging from 250 bp to 12 kb. The 100 bp YEA Ladder DNA Marker IV **(FYD012-001)** contains 15 discrete fragments ranging from 100 bp to 5000 bp. It is supplied in a ready-to-use format containing blue tracking dyes and mixed at varied concentrations. It allows sizing and concentration estimation of DNA fragments on agarose gels generated by PCR or restriction digestion.

Features

- Sharp and clear banding patterns
- Mass marker bands for easy DNA quantification
- Accurate DNA migration on agarose gel

Applications

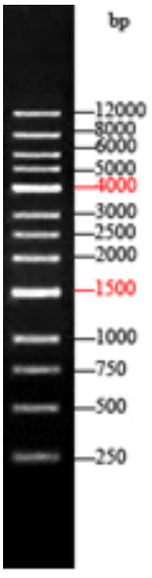
- Locating DNA of interest
- DNA quantification
- DNA tracking

Quality Control

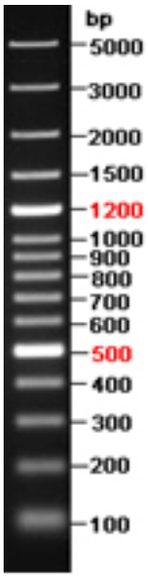
5 µl of YEA Ladder DNA Markers provide expected numbers of bands with accurate molecular weight on agarose gel after running electrophoresis.

Results

FYD011-1 kb



FYD012-100 bp



1.5% Agarose · 5µl/lane · 1X TAE buffer

-20ºC

 # FYD011-1ML
1 kb YEA Ladder DNA Marker IV
1ml

 # FYD012-1ML
100 bp YEA Ladder DNA Marker IV
1ml

Related Products

- YEAtaq DNA Polymerase 2-1
- RealStart DNA Polymerase Premix 2-2
- EZtime Real-Time PCR Premix 2-3
- Deoxy+ HiSpec Reverse Transcriptase 2-5
- Deoxy+ OneStep RT-PCR Kit 2-6
- Deoxynucleotides (dNTPs) 2-10
- T&A Cloning Kit 3-14

EtB"Out" Nucleic Acid Staining Solution

RT

 # FYD010-200P (200 preps)
EtB"Out" Nucleic Acid Staining Solution (2.0) 1ml

Description

EtB"Out" Nucleic Acid Staining Solution aims to replace traditional EtBr (ethidium bromide) in performing nucleic acid detection in agarose gels. EtBr has long been known as a strong mutagen, however EtB"Out" causes only neglectable mutations in the Ames test.

The sensitivity of EtB"Out" is identical to that of EtBr. Under UV light, EtB"Out" emits green fluorescence when bound to DNA or RNA. EtB"Out" can be excited at 290 nm and 490 nm. The fluorescence emission peak of EtB"Out" when bound to DNA is at 537 nm.

Features

- **Economic :** use only 5 µl in 100 ml of agarose gel
- **Sensitive :** sensitivity is comparable and even better than EtBr, DNA concentration as low as 5 ng can be detecded
- **Safe :** non-mutagenic, non-toxic, non carcinogenic
- **Green :** no hazardous waste

Applications

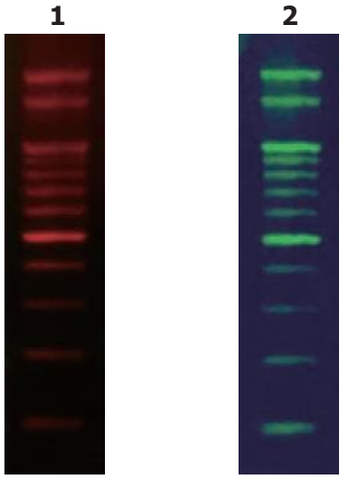
Nucleic acids detection (dsDNA and ssRNA) within agarose gel after electrophoresis under UV illumination

Quality Assurance

The quality of the EtB"Out" Nucleic Acid Staining Solution is tested on a lot-to-lot basis. Nucleic acids is extracted from tissues and serial diluted. Electrophoresis is performed and the agarose gel is stained with EtB"Out" Nucleic Acid Staining Solution to ensure the performance.

Results

5 µl / 100 ml Agarose Gel



Lane 1: EtBr
Lane 2: EtB"Out"

Nucleic staining using EtB"Out" Nucleic Acid Staining Solution. Two individual agarose gels were prepared with 5 µl of EtBr and EtB"Out" respectively. Staining results were examined under UV illumination. Identical results were observed and EtB"Out" even showed a better staining result than using EtBr.

Related Products

- YEAtaq DNA Polymerase 2-1
- RealStart DNA Polymerase Premix 2-2
- EZtime Real-Time PCR Premix 2-3
- Deoxy+ HiSpec Reverse Transcriptase 2-5
- Deoxy+ OneStep RT-PCR Kit 2-6
- Deoxynucleotides (dNTPs) 2-10
- T&A Cloning Kit 3-14

Note

PCR, RT-PCR & dNTPs

*YEA*taq DNA Polymerase

-20°C

 # FYT601-500U (500 units)

*YEA*taq DNA Polymerase (5 U/µl)	100 µl
10× Reaction Buffer	2 ml
dNTPs Mix (10 mM)	200 µl

 # FYT611-500U (500 units)

*YEA*taq DNA Polymerase (5 U/µl)	100 µl
10× Reaction Buffer	2 ml

* The reaction buffer is supplied as a 10× concentrate and should be diluted for use.

Description

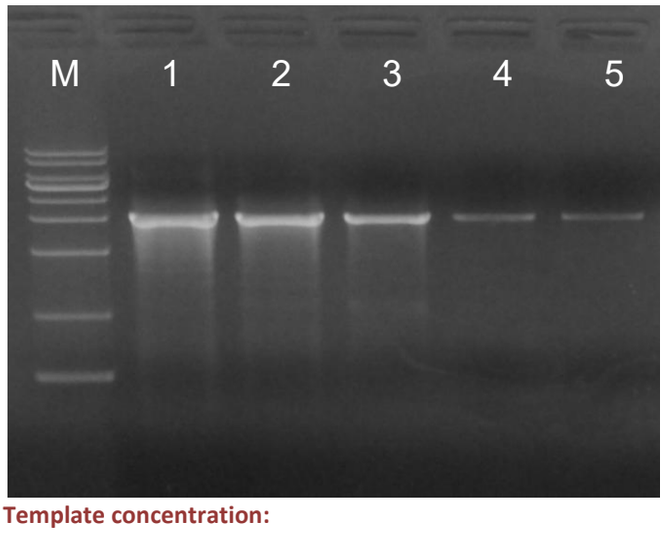
YEAtaq II DNA Polymerase is a thermostable enzyme derived from Thermus aquaticus YT-1 strain. The enzyme is in a recombinant form expressed in E. coli. It is able to with stand repeated heating to 95°C without significant loss of activity. It possesses both 5'-3' polymerase and exonuclease activity, and has no detectable 3'-5' exonuclease activity. It has a 3' adenylation activity. Thus, the PCR products can be used directly in TA-cloning procedures.

Yeastern Biotech offers *YEA*taq DNA Polymerase in two different packages: one with dNTPs mix and the other without.

Applications

- Cloning
- Screening
- Primer extension
- Terminal dA tailing
- Routine PCR amplification of DNA fragments up to 3 Kb
- DNA labeling
- DNA sequencing

Results



Template concentration:
Lane M：1kb DNA Marker
Lane 1：1 ng/µl
Lane 2：0.1 ng/µl
Lane 3：0.01 ng/µl
Lane 4：0.001 ng/µl
Lane 5：0.0005 ng/µl

Patterns/Disclaimer

Some applications in which this product can be used may be covered by patents issued and applicable in certain countries. Because purchase of this product does not include a license to perform any patented application, users of this product may be required to obtain a patent license depending upon the particular application and country in which the product is used.

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- YEA Ladder DNA Markers 1-12
- Deoxynucleotides (dNTPs) 2-10
- T&A Cloning Kit 3-14

RealStart DNA Polymerase Premix

Description

RealStart DNA Polymerase premix is an ultra-sensitive and convenient PCR premix product. It contains 2× concentrated solution of HotStart DNA polymerase, dNTPs, optimized buffers, and loading dye (optional) needed for PCR. The only step it takes to perform PCR with RealStart DNA Polymerase premix is to add DNA template and primers into the reaction mix. Since special HotStart DNA polymerase in the premix is activated after heating, it greatly reduces non-specific amplification when working with the premix at room temperature.

Features

- **Simple & time-saving :** Just add templates of interest and primers into the RealStart DNA Polymerase Premix.
- **Less Contamination :** Reduce non-specific amplification caused by mispriming events that occur during setup and initial temperature increase.
- **High Sensitivity :** tested in amplification of a single gene copy.
- **Convenient :** An excellent tool when working with high quantities of samples.
- **Sample Size :** work excellent for short DNA templates (size shorter than 600 bp).

Applications

- High throughput hot-start PCR.
- RT-PCR.
- Highly specific amplification of complex genomic and cDNA templates.
- Amplification of low copy DNA targets.
- Generation of PCR products for TA cloning.

Unit Definition

One unit is defined as the amount of enzyme that will incorporate 10 nmol of dNTPs into acid-insoluble material in 30 minutes at 72 °C.

Quality Control

- Nuclease activity is not detected after incubation of 1 µg λ/*Hind* III DNA with 5 units of RealStart DNA polymerase in 50 µl reaction buffer for 18 hours at 37 °C.
- The absence of endo-, exodeoxyribonucleases and ribonucleases is confirmed by appropriate tests. Functional test is performed by PCR.

-20ºC

 # FYT101-100P (100 preps)

2× RealStart DNA Polymerase Premix (w/o loading dye)	1.25 ml 0.1 U/µl

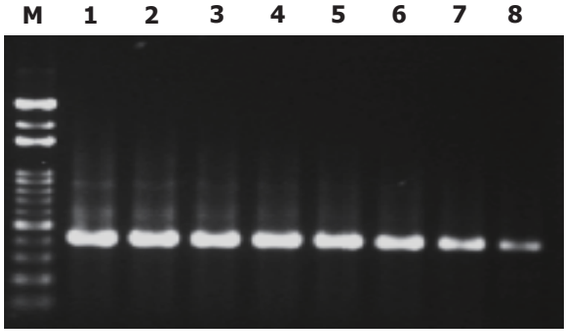
Premix contains:

- Hotstart Taq DNA polymerase
- dNTPs mix (including dATP, dCTP, dGTP, dTTP)
- 7.5 mM $MgCl_2$

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- YEA Ladder DNA Markers 1-12
- T&A Cloning Kit 3-14

Results



High sensitivity for low copy genes!

Template: pUC18
1 mg pUC18 DNA = 3.4 x10^{11} molecules

Lane M: 1 kb DNA Marker **(#FYD001-500UL)**

Lane 1: 3 x10^{7} molecules	**Lane 2:** 3 x10^{6} molecules
Lane 3: 3 x10^{5} molecules	**Lane 4:** 3 x10^{4} molecules
Lane 5: 3 x10^{3} molecules	**Lane 6:** 3 x10^{2} molecules
Lane 7: 3 x10^{1} molecules	**Lane 8:** 3 molecules

EZtime Real-Time PCR Premix(SYBR Green)

-20°C

 # FYT104-100P (100 preps)

EZtime Fast Real-Time PCR Premix (2×, SYBR Green I, ROX)	1 ml

 # FYT104-400P (400 preps)

EZtime Fast Real-Time PCR Premix (2×, SYBR Green I, ROX)	1 ml x 4

Premix contains:

- Hotstart Taq DNA polymerase
- SYBR Green real-time PCR Buffer
- dNTP mix including dATP, dCTP, dGTP, dTTP
- 5 mM $MgCl_2$

Description

The EZtime Real-Time PCR Premix **(# FYT104-100P)** is a ready-to-use, 2× concentrated PCR premix, including Hotstart Taq, SYBR Green I, optimized reaction buffer and nucleotides **(# FYT104-100P with ROX)** for running quantitative real-time PCR, including qPCR and 2-step qRT-PCR, in the SYBR Green I detection format. SYBR Green Premix provides high sensitivity, wide dynamic range and reproducibility for quantification.

Features

- **Specificity :** Hotstart Taq and the optimized buffer eliminates non-specific amplification and formation of primer dimers
- **Sensitivity :** detects low copy number targets
- **Wide linear range :** accurate quantification across 9 orders of magnitude
- **Reproducibility and convenience :** ready-to-use 2× master mix minimizes pipetting error and reduces set-up time

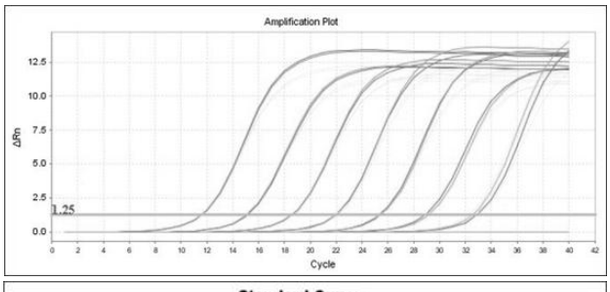
Applications

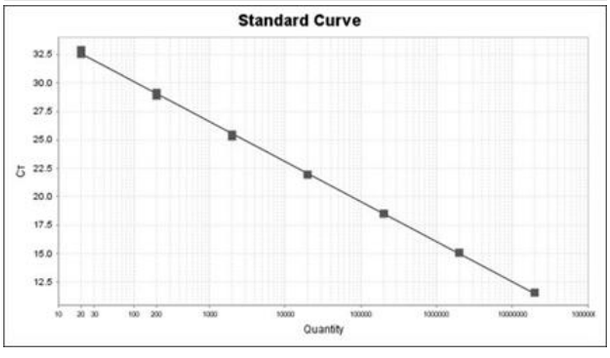
- Quantitative real-time PCR
- Quantitative 2-step RT-PCR
- Quick and accurate detection and quantification of target gene through real-time PCR

Quality Control

- Error<0.01, 2.1>Efficiency>1.90, ΔCP<1
- The absence of endo-, exodeoxyribonucleases and ribonucleases is confirmed by appropriate quality tests. Functionally tested in qPCR for specificity, sensitivity and reproducibility using serial dilutions of control genomic DNA template.

Results





Primers were designed to amplify a specific region of YB T&A™ Vector that has been serially diluted to different concentrations.

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- YEA Ladder DNA Markers 1-12

EZtime Real-Time PCR Premix(TaqMan)

Description

EZtime Fast Real-Time PCR Premix for TaqMan® Probe **(#FYT110-100P/400P)** is a ready-to-use, 2× concentrated premix reagent, containing all components except primers, probe, and template. It is formulated with a novel hot-start Taq DNA polymerase, which is capable of catalyzing DNA amplification in a fast PCR mode. This special blend greatly shortens the running time of real-time quantitative PCR by around 1 hour when compared to traditional qPCR. In addition, it precisely meets current researchers' needs for performing gene detection (qPCR) and quantification of gene expression (2-step qRT-PCR) in a high speed and/or high-throughput manner in addition to those basic requirements of high sensitivity, wide dynamic range, and good reproducibility.

Features

- **Fast :** shortens the running time of real-time quantitative PCR by around 1 hour
- **Specificity :** Hotstart Taq and the optimized buffer eliminates non-specific amplification and formation of primer dimers
- **Sensitivity :** detects low copy number targets
- **Wide linear range :** accurate quantification across 9 orders of magnitude
- **Reproducibility and convenience :** ready-to-use 2× master mix minimizes pipetting error and reduces set-up time

Applications

- Quantitative real-time PCR
- Quantitative 2-step RT-PCR
- Quick and accurate detection and quantification of target gene through real-time PCR

Quality Control

- Error<0.01, 2.1>Efficiency>1.90, ΔCP<1
- The absence of endo-, exodeoxyribonucleases and ribonucleases is confirmed by appropriate quality tests. Functionally tested in qPCR for specificity, sensitivity and reproducibility using serial dilutions of control genomic DNA template.

-20ºC

 # FYT110-100P (100 preps)

EZtime Fast Real-Time PCR Premix (2×, TaqMan, ROX)	1 ml

 # FYT110-400P (400 preps)

EZtime Fast Real-Time PCR Premix (2×, TaqMan, ROX)	1 ml x 4

Premix contains:

- Hotstart Taq DNA polymerase
- TaqMan real-time PCR Buffer
- dNTP mix including dATP, dCTP, dGTP, dTTP
- 5 mM $MgCl_2$

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- YEA Ladder DNA Markers 1-12

Deoxy+ HiSpec Reverse Transcriptase

-20ºC

 # FYT501-100R (100 rxns)

Deoxy+ HiSpec Reverse Transcriptase (20000 U)	50 µl x 2
2× Deoxy+ RT Premix*	0.5 ml x 2

(2× Deoxy+ RT Premix contains RT buffer, 0.1 M DTT and 10 mM dNTPs)*

Description

Deoxy+ HiSpec Reverse Transcriptase (RT) is genetically engineered by introducing of point mutations to MMLV RT that increase half-life, reduce RNase activity and increase thermal stability. Those designed mutations lead to increased specificity of Deoxy+ HiSpec RT and the highest cDNA yield of all RTs. It is ideal for RT-PCR of a specific gene or generating cDNA from total or poly (A)+ RNA samples. It synthesizes a complementary DNA strand from total RNA, mRNA, or an RNA:DNA hybrid.

Features

- Half life of 100 minutes at 50˚C for the highest cDNA yields
- Reduced RNase H activity for more full-length cDNA
- Full activity at 50˚C for increased specificity with GSP
- Ability to increase RT units without inhibiting subsequent PCR

Applications

- Synthesis of first-strand cDNA
- Array labeling
- cDNA libraries
- RT-PCR, primer extension, and 3’ and 5’ RACE

Unit Definition

One unit incorporates 1 nmole of dTTP into acid precipitable material in 10 minutes at 37°C using poly(A)-oligo(dT) as template primer.

Quality Control

This product has passed the following quality control assays: SDS-polyacrylamide gel analysis for purity; functional absence of endodeoxyribonuclease, 3’ and 5’ exodeoxyribonuclease, and ribonuclease activities; yield and length of cDNA product.

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- YEA Ladder DNA Markers 1-12
- T&A Cloning Kit 3-14

Deoxy+ OneStep RT-PCR Kit

Description

The Deoxy+ OneStep RT-PCR Kit is a ready-to-use master mix, which eliminates the need for optimization of reaction and cycling conditions for one-step RT-PCR. The reaction can be prepared by simply adding template RNA and primersto the master mix. The use of Yeastern's Hotstart DNA polymerase and Deoxy+ HiSpec RT enables reliable real-time RT-PCR quantification on any real-time PCR machines. Since it is a one-tube reaction, the procedure makes high-throughput analysis possible.

After reverse transcription, reactions are heated to 95°C for 10 minutes to inactivate the reverse transcriptase and simultaneously activate HotStart Taq DNA polymerase. This hot start to the PCR eliminates any nonspecific amplification products such as primer-dimers and reduces background smear, ensuring highly sensitive and reproducible RT-PCR.

Features

- Fast and easy one-tube setup
- One-step RT-PCR of any RNA template without optimization
- Unique enzyme mix for high specificity and sensitivity
- Optimized reverse-transcription and amplification buffer

Applications

- Onestep RT-PCR
- Gene-expression analysis

Quality Control

The performance of Deoxy+ OneStep RT-PCR Kit is tested in an RT reaction using human embryonic kidney cell lysate with primer d(T)20. The sensitivity of the kit is verified by the detection of B2M transcript after 40 cycles. The length of cDNA achieved is verified by detection of a 248 bp by DNA agarose gel and DNA sequencing.

-20ºC

 # FYT503-50P (50 preps)

2× Deoxy+ OneStep RT PCR Premix	0.625 ml
Sterilized ddH_2O	1 ml

 # FYT503-100P (100 preps)

2× Deoxy+ OneStep RT PCR Premix	0.625 ml x 2
Sterilized ddH_2O	1 ml x 2

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- YEA Ladder DNA Markers 1-12
- T&A Cloning Kit 3-14

Deoxy+ Real-time SYBR Green RT-PCR Kit

-20ºC

 # FYT504-50P (50 preps)

2× Deoxy+ Real-time SYBR Green RT PCR Premix, ROX	0.625 ml
Sterilized ddH_2O	1 ml

 # FYT504-100P (100 preps)

2× Deoxy+ Real-time SYBR Green RT PCR Premix, ROX	0.625 ml x 2
Sterilized ddH_2O	1 ml x 2

Description

Deoxy+ Real-time SYBR Green RT-PCR system provides users with a rapid and simple way to quantify the expression of gene of interest based on Real-time PCR system containing SYBR Green. Yeastern's Deoxy+ HiSpec RT, Hotstart DNA polymerase and all the components for Real-time SYBR Green RT-PCR are skillfully mixed within a single tube. Unique buffer system allows highly specific quantification by preventing the formation of nonspecific products and primer-dimers.

Features

- Ready-to-use master mix to allow faster setup, maximize throughput and reduce the contamination risk of real-time RT-PCR analysis
- Detection of even low copy numbers
- Excellent sensitivity and easy optimization with SYBR Green

Applications

- Validation of siRNA-mediated gene knockdown
- Detection of gene regulation

Quality Control

The performance of Deoxy+ Real-time SYBR Green RT-PCR Kit is tested in an RT reaction using human embryonic kidney cell lysate with primer $d(T)_{20}$. The sensitivity of the kit is verified by the detection of B2M transcript after 40 cycles. The length of cDNA achieved is verified by detection of a 248 bp by DNA agarose gel and DNA sequencing.

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- T&A Cloning Kit 3-14

Deoxy+ Real-time TaqMan RT-PCR Kit

Description

TaqMan detection system uses a designed fluorogenic probe to detect target PCR products during real-time PCR cycle. Fluorescent is detected when the quencher of probe is removed during the PCR extension cycle. Deoxy+ Real-time TaqMan RT-PCR Kit complete reverse transcription and TaqMan Real-time PCR in a single tube. Yeastern's Deoxy+ HiSpec RT, Hotstart DNA polymerase and all the components necessary for performing TaqMan Real-time PCR from RNA template are specially prepared to ensure high specificity and high sensitivity.

Features

- Ready-to-use master mix to allow faster setup, maximize throughput and reduce the contamination risk of real-time RT-PCR analysis
- Detection of even low copy numbers
- Excellent specificity and reproducibility with better signal to noise ratio
- Higher PCR efficiency

Applications

- Validation of siRNA-mediated gene knockdown
- Detection of multiple gene expressions

Quality Control

The performance of Deoxy+ Real-time TaqMan RT-PCR kit is tested in an RT reaction using human embryonic kidney cell lysate with primer $d(T)_{20}$. The sensitivity of the kit is verified by the detection of B2M transcript after 40 cycles. The length of cDNA achieved is verified by detection of a 248 bp by DNA agarose gel and DNA sequencing.

-20ºC

 # FYT505-50P (50 preps)

Deoxy+ Real-time Taqman RT PCR Premix, ROX	0.625 ml
Sterilized ddH_2O	1 ml

 # FYT505-100P (100 preps)

Deoxy+ Real-time Taqman RT PCR Premix, ROX	0.625 ml x 2
Sterilized ddH_2O	1 ml x 2

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- T&A Cloning Kit 3-14

EZtime LAMP Premix (2X)

-20ºC

 # FYT701-50R (50 rxns)

EZtime LAMP Premix (2X)	0.625 ml
Fluorescence Dye (10X)	0.125 ml

Description

LAMP (Loop-mediated Isothermal Amplification) is a rapid, simple, economical, and highly sensitive nucleic acid amplification technique that can be performed under isothermal conditions (constant temperature), eliminating the need for expensive equipment such as thermal cyclers. Because it is very simple to operate and only requires a constant temperature instrument, so it is suitable for field screening, point-of-care or bedside testing, primary care institutions, small-scale clinical laboratories, remote areas with insufficient resources, field molecular epidemiological surveys or large-scale quarantine work.

Features

- **Isothermal Reaction---**LAMP amplifies DNA at a constant temperature, removing the need for a thermal cycler.
- **Speed---**The amplification is rapid, often yielding results in 30-60 minutes, making it suitable for time-sensitive diagnostics.
- **High Specificity---**It uses 4 to 6 primers targeting 6 to 8 regions of the target DNA, ensuring high specificity.
- **High Sensitivity---**LAMP can detect even low amounts of DNA, making it effective for early-stage infection detection.

Applications

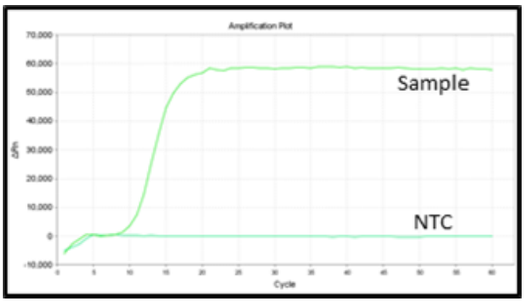
- **Clinical diagnostics---**Detection of infectious diseases such as COVID-19, tuberculosis, malaria, and other viral or bacterial pathogens.
- **Food safety and environmental monitoring---**Identification of foodborne pathogens and contamination in water or environmental samples.
- **Agriculture and veterinary medicine---**Detection of plant and animal pathogens for disease control.
- **Point-of-care testing---**Suitable for field or low-resource settings because it operates at a constant temperature and does not require complex equipment.

Results

(HYT701-A01) LAMP Premix (2X)	12.5 µl
(HYT701-A02) Fluorescence Dye (10X)	2.5 µl
LAMP Primer Mix	2.5 µl
Nucleic acid template	5.0 µl
d.d. Water	up to 25.0 µl

60～68℃, 60 min. (LAMP reaction)

80℃, 5 min. (Inactivation reaction)
or
Melting curve analysis



The nucleic acid sample showed a signal reaction within 10 minutes; the negative control group showed no signal reaction within 60 minutes.

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- T&A Cloning Kit 3-14

Deoxynucleotides (dNTPs)

Description

Yeastern Biotech offers nucleotides with high purity for use in PCR, RT-PCR, RT assay, DNA labeling reactions and sequencing/cycle sequencing analysis.

Features

- Greater than 99% purity confirmed by HPLC.
- Free of trace contaminating nucleotides.
- Free of endo- and exodeoxyribonuclease, ribonuclease, phosphatase and nicking activities.
- Highly stable – the neutral pH of the nucleotide solutions ensures stability during long-term storage.
- Stable for years at -20°C.
- Stable after multiple freeze-thaw cycles.
- 90-95% of dNTPs remain in triphosphate form after 7 weeks at room temperature.
- 85-90% of dNTPs remain in triphosphate form after 30 cycles of PCR (1 min at 94°C; 3 mins at 72°C).
- Application tested in standard PCR, high fidelity PCR, long range PCR (40 kb), cDNA synthesis, RT-PCR, and real-time PCR.

Applications

Yeastern Biotech dNTPs can be used in all molecular biology applications including standard PCR, high fidelity, long PCR, LAMP-PCR, cDNA synthesis, RT-PCR, real-time PCR, RDA, MDA, DNA labeling and DNA sequencing.

Quality Control

- dCTP, dATP, dGTP and dTTP are all in the form of sodium salt (pH 8.3); > 99% dCTP (HPLC), < 0.9% dCDP.
- Greater than 99% purity of each component confirmed by HPLC. Functionally tested in PCR with Taq and Pfu DNA Polymerases. The absence of endo-, exodeoxyribonuclease, ribonuclease and nicking activities confirmed by appropriate tests.

-20ºC

 # FYT013-200UL
dNTPs (10 mM) 200 µl

 # FYT014-100UL
dCTP (100 mM) 100 µl

 # FYT015-100UL
dATP (100 mM) 100 µl

 # FYT016-100UL
dGTP (100 mM) 100 µl

 # FYT017-100UL
dTTP (100 mM) 100 µl

Related Products

- UniversAll™ Tissue Extraction/PCR Kits 1-1
- YEAtaq DNA Polymerase 2-1
- T&A Cloning Kit 3-14

Gene Cloning

Introduction:
ECOS™ 1 Min Transformation Competent Cells

Description

ECOS™ Competent Cells are the first innovative products of Yeastern Biotech's R&D team, which strives to bring noble products that make research faster and easier. ECOS™ is Yeastern Biotech's registered trademark in USA, Japan, Canada, Korea, and Taiwan. The name speaks for the merits of this line of products - ***E. Coli* O**ne-**S**tep transformation. The reverse of this name is SOCE – **SOC E**liminated. ECOS™ protocol allows users to finish the transformation within one step and to skip the SOC recovery step. Therefore, ECOS™ competent cells are the fastest transforming cells worldwide. The traditional protocol requires recovery step and takes 1 ~ 2 hours to finish, but ECOS™ allows transformation to be finished within 1 minute and the procedures are a lot simpler. Please check the ECOS™ protocol section.

The latest progress in the ECOS™ product section is the development of another 3 protocols in addition to the standard ECOS™ protocol that was first introduced in 2003. The non-heat shock protocol allows transformation to be further simplified, and the 2 ~ 6-minute protocol enhances transformation efficiency significantly. These protocols have been developed based on the results of numerous experiments involving different antibiotics, plasmid size, and various conditions. Now, Yeastern Biotech offers our customers a new ECOS™ competent cells with similar transformation efficiency to that of electroporation for applications which require very high transformation efficiency such as the construction of genomic libraries.

ECOS™ Efficiency Guarantee

ECOS™ competent cells should be stored in a – 70°C freezer. Since competent cells are very sensitive to freeze-thaw cycles, exposure to temperature variations should be minimized. In order to control the quality of competent cells, Yeastern Biotech adds electronic temperature monitors to record the temperature during the shipping process. Yeastern Biotech is the only company that offers this service.

ECOS™ Technology is Patented

Yeastern Biotech Co., Ltd. owns the patent of ECOS™ technology (including protocol) exclusively in Canada **(TMA622,671)**, USA **(US 6,864,088, US 7,098,033, US 7,820,443)**, UK **(GB2383582)**, German **(Nr. 102 51 429)**, France **(FR 2832727)**, Taiwan **(I 229696)**, China **(ZL 2005 1 0112590.8)**, Korea **(0604787, 10-1350283)**, and Japan **(4867595)**. Under the protection of this patent, Yeastern Biotech is the only company that has the right to use the protocol with the claims that transformation with our ECOS™ chemically competent cells can be finished within one minute and SOC is not needed. If any one intends to sell competent cells that use ECOS™ protocol or its similar version, please contact our headquarter in Taiwan for licensing.

Features

- No LB/SOC required
- Revolutionary 1- or 6-minute transformation, instead of 1 ~ 2 hours
- Procedures are simplified
- Several protocols to choose from according to your needsin efficiency and convenience
- Strict QC process to check the efficiency of each batch produced
- Ideal for bench users to automatize cloning projects
- Electronically monitored shipping process to check temperature fluctuation during shipping

Quality Control

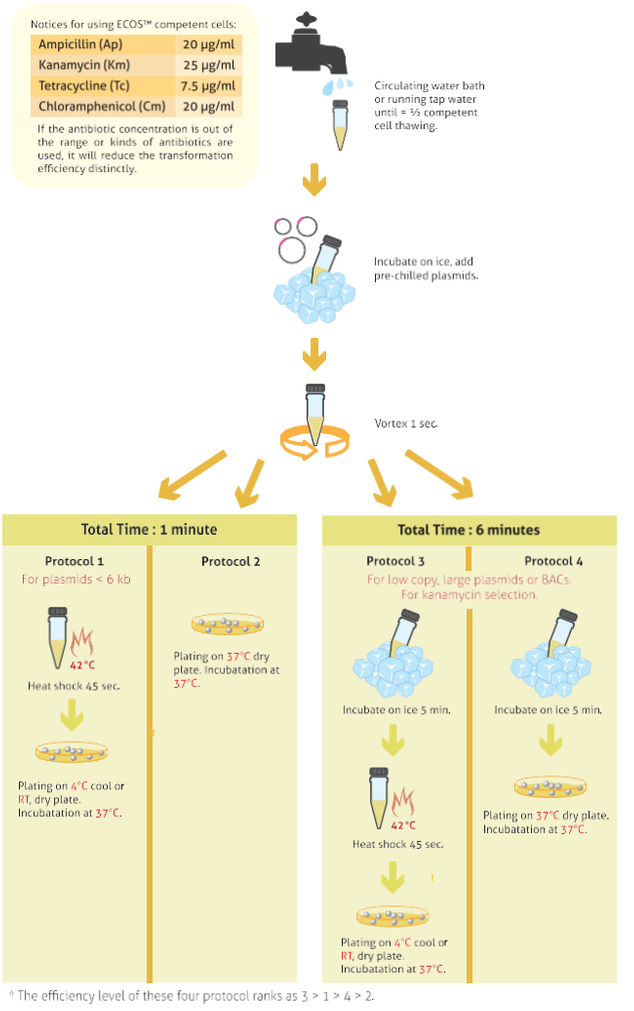
Each lot of competent cells has to pass three quality control tests before shipping:

1. **Efficiency test :** each batch of ECOS™ should meet the claimed transformation efficiency at the time of production using Protocol 1 or 3 (Page 3-2) and supercoiled pUC19 DNA.
2. **Contamination test :** competent cells were plated directly on ampicillin plates without being transformed. To pass the test, no colonies should be seen after overnight incubation.
3. **A-complementation test :** this test is performed for all ECOS™ competent cells except for ECOS™ 21(DE3) and ECOS™ 2163. To pass the test, the ratio of white colonies over the total colonies should be less than 3%.

ECOS™ ProTocol Comparison Table

Competent Cell Types	ECOS™ Competent Cells	Traditional Chemically Competent Cells	Electro-Competent Cells
Time	**1 ~6 minutes**	1.5 ~ 2 hours	1.5 ~ 2.5 hours
Protocol	• **One step** • **No incubation on ice after heat shock** • **No tube change** • **No recovery step**	• Multiple steps • Requires incubation on ice after heat shock • Require tube change • Require recovery step	• Multiple steps • Requires incubation on ice after heat shock • Require tube change • Require recovery step
Authentic Representation	**High**	Require recovery step	Require recovery step
Transformation Efficiency	**10^7~ 10^{10} cfu/μg pUC19**	10^6 ~ 10^9 cfu/μg pUC19	~ 10^{10} cfu/μg pUC19
Cost	**Low**	High	High

ECOS™ ProTocol



* The efficiency level of these four protocol ranks as 3 > 1 > 4 > 2.

ECOS™ 96-Well ProTocol

Thaw ECOS™ Competent Cells
(4°C chamber for 3 ~ 4 minutes or pre-chilled metal block for ~ 30 seconds)

↓

Add Plasmid

↓

(0 ~ 4°C for 5 ~ 10 mins)

↙ ↘

No Heat Shock — 42°C for 15 ~ 45 secs

↓ ↓

Warm Plating — Cold Plating

↘ ↙

Incubate at 37°C

Total time: Only 5 ~10 minutes

FeaTures

Mutation	Applications	ECOS™ X / ECOS™ 101 [DH5α]	ECOS™ 9-5 [JM109]	ECOS™ Blue [XL1-Blue]	ECOS™ 21 [BL21(DE3)]	ECOS™ 10B [DH10B]	ECOS™ 2163 [GM2163]	ECOS™ St [HB101 Derived]	ECOS™ SONIC [BL21(DE3) Derived]
		F⁻ e n d A 1 hsdR17 (rk⁻, mk⁻) supE44 thi-1 λ⁻ recA1 gyrA96 relA1 Δ(argF-lacZYA) U169 Φ 80d lacZ Δ M15 deoR	F' tr aD/6 proA+ proB+ lacIq Δ(lacZ) M15 Δ(lac - proAB) supE44 hsdR17 recA1 gyrA96 thi⁻1 endA1 relA1 e14⁻ λ⁻	F' recA1 endA1 gyrA96 thi⁻1 hsdR17(rk⁻, mk+) supE44 λ⁻ Δ(lac) proAB lacIqZΔM15 Tn10 (tetr)	F⁻ hsdS gal (λ cIts857 ind1 Sam7 nin5 lacUV5- T7 gene I)	F⁻ endA1 recA1 galE15 galK16 nupG rpsL ΔlacX74 Φ80d lacZ ΔM15 araD1/9 Δ(lara,leu)7697 mcrA Δ(mrr⁻ hsdRMS⁻mcr BC) λ⁻	F⁻ ara⁻14 leuB6 thi⁻1 fhuA/1 lacY1 tsx⁻78 galK2 galT22 supE44 rpsL1/6(strr) xyl⁻5 mtl⁻1 dam1/:Tn9 (camr) dcm⁻6 mcrB1 hsdR2(rk⁻mk+) mcrA	F⁻ mcrB mrr hsdS20(rB⁻,mB⁻) recA13 supE44 ara-14 galK2 lacY1 proA2 rpsL20(StrR) xyl-5 λ⁻ leu mtl-1	F⁻ ompT hsdSB (rB⁻ mB⁻) gal dcm (DE3)ΔendA ΔrecA pLysS (CamR)
endA1	Prevent DNA degradation during extraction	✓	✓	✓	X	✓	X	✓	✓
recA1	Prevent DNA recombination	✓	✓	✓	X	✓	X	✓	✓
hsdR	Improve transformation efficiency (for unmethylated PCR DNA and cDNA)	✓	✓	✓	✓	✓	✓	✓	✓
deoR	Improve transformation efficiency (for large size plasmid and cosmids)	✓	X	X	X	✓	X	X	x
LacZ M15	Inhibit LacZ gene expression for blue/white screen	✓	✓	✓	X	✓	X	✓	x
rne131	Inhibit RNase E and improve mRNA stability	X	X	X	✓	X	X	X	✓
ompT & Lon	ompT & Lon Protease deficient and improve protein yield	X	X	X	✓	X	X	X	✓
dam / dcm	Prevent DNA methylation	X	X	X	✓ / X	X	✓ / ✓	X	✓ / X
mcrA / mcrB	Prevent methylated DNA from degradation	X	X	X	X	✓ / ✓	✓ / ✓	X / ✓	X

ECOS™ Protocol Comparison Table

Cloning Applications	ECOS™ X / ECOS™ 101 [DH5α]	ECOS™ 9-5 [JM109]	ECOS™ Blue [XL1-Blue]	ECOS™ 21 [BL21(DE3)]	ECOS™ 10B [DH10B]	ECOS™ 2163 [GM2163]	ECOS™ St [HB101 Derived]	ECOS™ SONIC [BL21(DE3) Derived]
Large Plasmids > 6 kb	Ideal	*	*	*	Yes	Yes	Yes	*
Subcloning	Ideal	Yes	Yes	*	Ideal	No	Yes	Yes
cDNA Library	Yes	Yes	Yes	*	Yes	*	Yes	*
Fast Growth	*	Ideal	*	Yes	*	*	*	Yes
Single Stranded DNA	*	Ideal	*	*	*	*	*	*
Mutagenesis	Yes	*	*	No	Yes	*	Yes	*
Protein Expression	No	No	No	Ideal	*	No	No	Yes
Toxic Protein Expression	No	No	No	No	No	No	No	Ideal
Blue/White Screen	Yes	Yes	Ideal	No	Yes	No	Yes	No
DNA Unmethylation	No	No	No	No	No	Yes	No	No
Genomic DNA Cloning	No	No	No	No	Yes	No	No	No
Unstable Sequence Cloning	No	No	No	No	No	No	Ideal	No

* Means the strain can be used for the purpose but may not yield the best result.

ECOS™ X Competent Cells

Strain: DH5α

-70°C

 # FYE610-10VL (10 preps)
Efficiency >5 x 10^9 cfu/µg

100 µl/vial	10 vials
Control Plasmid (pUC19)	5 µl (10^{-4} µg/µl)

 # FYE610-80VL (80 preps)
Efficiency >5 x 10^9 cfu/µg

100 µl/vial	80 vials
Control Plasmid (pUC19)	5 µl (10^{-4} µg/µl)

Description

DH5α is the most popular *E. coli* strain for everyday cloning applications. It supports blue/white screening for easy selection of recombinant DNA with X-Gal. In addition, DH5α carries *rec*A1 mutation that eliminates homologous recombination ensuring insert stability. It also carries *end*A1 mutations that greatly improve the quality of plasmid DNA and yield prepared from mini-prep. It is useful for the transformation of large plasmids and two-hybrid systems (up to 20 kb).

After 5-year invention based on our ECOS™ technology, Yeastern Biotech is able to offer our customers a brand new competent cell product with similar transformation efficiency to that of electroporation. ECOS™ X can be utilized for applications which require very high transformation efficiency such as the construction of genomic libraries. The "X" as shown in the name, stands for extreme, meaning this competent cell was designed to exceed limitation and to set new limitation! The "X" also represents "10" in Roman numeral; our new product aims to reach 10^{10} in its efficiency.

Genotype

F¯ *endA1 hsdR17*(rk¯, mk¯) *supE44 thi-1 λ¯recA1 gyrA96 relA1 Δ(argF-lacZYA)* U169 Φ80d *lacZ ΔM15 deoR*

Features

- One step in one tube and finish in 6 minutes
- High efficiency as electro-competent cells
- Requires no expensive equipment

Applications

- Efficient transformation of products from routine TA cloning
- Transformation of minute amounts of PCR products
- Construction of a more representative gene library

Efficiency

> **5 x 10^9 cfu/ µg**

Recommended for:

- Super high efficiency cloning
- Cloning lowest abundance cDNA
- Gene library

Related Products

- HiYield Plasmid Mini Kit 2.0 1-4
- YEAtaq DNA Polymerase 2-1
- T&A™ Cloning Kit 3-14
- Glass Plating Beads 3-26

Do not store the cells in liquid nitrogen!

ECOS™ 101 Competent Cells

Strain: DH5α

Description

DH5α is the most popular *E. coli* strain for everyday cloning applications. It supports blue/white screening for easy selection of recombinant DNA with X-Gal. In addition, DH5α carries *rec*A1 mutation that eliminates homologous recombination ensuring insert stability. It also carries *end*A1 mutations that greatly improve the quality of plasmid DNA and yield prepared from mini-prep. It is useful for the transformation of large plasmids and two-hybrid systems (up to 14 kb).

Genotype

F$^-$ *endA1 hsdR17*(rk$^-$, mk$^-$) *supE44 thi-1 λ*$^-$*recA1 gyrA96 relA1 Δ(argF-lacZYA)* U169 Φ80d *lacZ* ΔM15 *deoR*

Features

Suitable for cloning with large plasmid and cDNA library construction, and also allow blue-white colony screening.

Applications

- Cloning and subcloning
- Scale-up application
- Blue/white screening

Efficiency

> 1 x 10^8 cfu/µg

Recommended for:

- Subcloning
- General cloning

>3 x 10^8 cfu/µg

Recommended for:

- High efficiency cloning
- Cloning low abundance transcripts
- General cloning
- Gene library

> 1 x 10^9 cfu/µg

Recommended for:

- Super high efficiency cloning
- Cloning lowest abundance transcripts
- Gene library

Do not store the cells in liquid nitrogen!

-70ºC

 # FYE607-10VL (10 preps)
Efficiency >1 x 10^8 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE607-80VL (80 preps)
Efficiency >1 x 10^8 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE608-10VL (10 preps)
Efficiency >3 x 10^8 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE608-80VL (80 preps)
Efficiency >3 x 10^8 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE609-10VL (10 preps)
Efficiency >1 x 10^9 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE609-80VL (80 preps)
Efficiency >1 x 10^9 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE607-96WL (96 preps)
Efficiency >5 x 10^7 cfu/µg
50 µl/well 96 wells

 # FYE608-96WL (96 preps)
Efficiency >1.5 x 10^8 cfu/µg
50 µl/well 96 wells

 # FYE609-96WL (96preps)
Efficiency >5 x 10^8 cfu/µg
50 µl/vial 96 wells

 # FYE678-10VL (10 preps)
Efficiency >5 x 10^8 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE678-80VL (80 preps)
Efficiency >5 x 10^8 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

Related Products please refer to 3-5

ECOS™ 9-5 Competent Cells

Strain: JM109

-70°C

 # FYE707-10VL (10 preps)
Efficiency >5 x 10^7 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE707-80VL (80 preps)
Efficiency >5 x 10^7 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE708-10VL (10 preps)
Efficiency >1 x 10^8 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE708-80VL (80 preps)
Efficiency >1 x 10^8 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE709-10VL (10 preps)
Efficiency >5 x 10^8 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE709-80VL (80 preps)
Efficiency >5 x 10^8 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE707-96WL (96 preps)
Efficiency >2.5 x 10^7 cfu/µg
50 µl/well 96 wells

 # FYE708-96WL (96 preps)
Efficiency >5 x 10^7 cfu/µg
50 µl/well 96 wells

 # FYE709-96WL (96preps)
Efficiency >2.5 x 10^8 cfu/µg
50 µl/vial 96 wells

Related Products

- HiYield Plasmid Mini Kit 2.0 1-4
- YEAtaq DNA Polymerase 2-1
- T&A™ Cloning Kit 3-14
- Glass Plating Beads 3-26

Description

JM109, a K strain bacterium, carries mutations in *rec*A and *end*A, leading to minimal recombination and improved quality of isolated plasmid DNA. In addition, the cells carry the F' episome which allows blue/white screening for recombinant DNA. Thus, it has been a popular strain for routine subcloning. The cells can also be utilized for single-stranded DNA rescue when M13 or phagemid systems are used simultaneously. The JM109 strain is sensitive to all common antibiotics.

This product can become a powerful cloning tool when it is used in combination with Yeastern's rapid ligation kit **(#FYC003-100R)**. The ligation can be finished within 5 minutes and followed by 1-minute transformation. The fast growth rate of JM109 allows colonies to show up within 8 hours. Try this strain when you are in urgent.

Genotype

F' *traD/6 proA*$^+$ *proB*$^+$ *lacIq Δ(lacZ)*M15 *Δ(lac-proAB) supE44 hsdR17 recA1 gyrA96 thi*$^-$*1 endA1 relA1 e14*$^-$ *λ*$^-$

Features

- Rapid growing strain
- Carries F' episome

Applications

- Preparation of ssDNA
- Construction of gene library
- Subcloning

Efficiency

> **1 x 10^8 cfu/µg**

Recommended for:
- High efficiency cloning
- Cloning low abundance transcripts
- General cloning
- Gene library

> **1 x 10^9 cfu/µg**

Recommended for:
- High efficiency cloning
- Cloning low abundance transcripts
- General cloning
- Gene library

> **5 x 10^7 cfu/µg**

Recommended for:
- Subcloning
- General cloning

Do not store the cells in liquid nitrogen!

ECOS™ Blue Competent Cells

Strain: XL1-Blue

Description

XL1-Blue is the most popular strain for blue/white screening. It is also an excellent host strain for routine cloning application using plasmid or lambda vectors. XL1-Blue cells are endonuclease (*end*A) deficient, which greatly improve the quality of mini-prep DNA, and are recombination (*rec*A) deficient, improving insert stability. The *hsd*R mutation prevents the cleavage of cloned DNA by the *Eco*K endonuclease system. The *lacIqZΔM15* gene on the F´ episome allows blue-white color screening.

Genotype

F' *recA1 endA1 gyrA96 thi*$^{-}$*1 hsdR17*(rk^{-}, mk^{+}) *supE44 λ*$^{-}$ *Δ(lac) proAB lacIqZΔ*M15 *Tn10 (tet*^{r}*)*

Features

- A strain modified to be ideal for blue/white screening
- Tetracycline resistant

Applications

- Routine cloning application
- Subcloning
- cDNA library
- Blue/white screening

Efficiency

> **5 x 10^{7} cfu/µg**

Recommended for:
- Routine cloning and subcloning
- Blue/white screening

> **2 x 10^{9} cfu/µg**

Recommended for:
- Routine cloning and subcloning
- Blue/white screening

> **5 x 10^{8} cfu/µg**

Recommended for:
- Routine cloning and subcloning
- Blue/white screening
- cDNA library

Do not store the cells in liquid nitrogen!

-70ºC

 # FYE107-10VL (10 preps)
Efficiency >1 x 10^{8} cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE107-80VL (80 preps)
Efficiency >1 x 10^{8} cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE108-10VL (10 preps)
Efficiency >5 x 10^{8} cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE108-80VL (80 preps)
Efficiency >5 x 10^{8} cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE109-10VL (10 preps)
Efficiency >2 x 10^{9} cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE109-80VL (80 preps)
Efficiency >2 x 10^{9} cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE107-96WL (96 preps)
Efficiency >5 x 10^{7} cfu/µg
50 µl/well 96 wells

 # FYE108-96WL (96 preps)
Efficiency >2.5x 10^{8} cfu/µg
50 µl/well 96 wells

 # FYE109-96WL (96preps)
Efficiency >1 x 10^{9} cfu/µg
50 µl/vial 96 wells

Related Products

- HiYield Plasmid Mini Kit 2.0 1-4
- YEAtaq DNA Polymerase 2-1
- T&A™ Cloning Kit 3-14
- Glass Plating Beads 3-26

ECOS™ 21 Competent Cells

Strain: BL21(DE3)

-70°C

 # FYE207-5VL (5 preps)
Efficiency >2 x 10^7 cfu/µg
100 µl/vial 5 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE207-40VL (40 preps)
Efficiency >2 x 10^7 cfu/µg
100 µl/vial 40 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE207-96WL (96 preps)
Efficiency >1 x 10^7 cfu/µg
50 µl/well 96 wells

Description

This strain provides high levels of protein expression. This strain carries the lambda DE3 lysogen, which expresses T7 RNA polymerase from the *lac*UV5 promoter by isopropyl-1-thio-ß-D-galactopyranoside (IPTG) induction. The mutated rne gene (*rne*131) encodes a truncated RNase E enzyme that lacks the ability to degrade mRNA, resulting in an increase in mRNA stability. The transformation efficiency of BL21 is usually low, so the 6 minutes/ heat shock cold plating protocol is recommended if high efficiency is desired.

Genotype

F^- *hsdS gal (λ cIts857 ind1 Sam7 nin5 lacUV5-T7 gene l)*

Features

- Lack of Lon and Omp proteases allows high-level protein expression and accumulation
- Easy gene induction

Applications

- IPTG induced gene expression in *E. coli*
- Ideal for high level expression of non-toxic recombinant protein expression using T7-based expression vectors
- Subcloning

Efficiency

> **2 x 10^7 cfu/µg**

Recommended for:

- Recombinant protein expression
- Subcloning

Related Products

- YEAtaq DNA Polymerase 2-1
- T&A™ Cloning Kit 3-14
- T&A™ Expression Vector 3-17
- Glass Plating Beads 3-26

Do not store the cells in liquid nitrogen!

ECOS™ 10B Competent Cells

Strain: DH10B

Description

DH10B is an MC1061 derivative. This strain was designed for the propagation of large insert DNA library clones. It is used extensively, taking advantage of properties such as high DNA transformation efficiency and maintenance of large plasmids.

While DH10B has been classically reported to be *gal*U *gal*K, the preliminary genome sequence for DH10B indicates that DH10B is actually *gal*E *gal*K *gal*U+. Genome sequence indicates that DH10B is actually *deo*R+. Complete genome sequence has been published.

Genotype

F$^-$ *endA1 recA1 galE15 galK16 nupG rpsL ΔlacX74* Φ80d *lacZ* ΔM15 *araD1/9 Δ(lara,leu)7697 mcrA Δ(mrr*$^-$*hsdRMS*$^-$*mcrBC) λ*$^-$

Features

- Streptomycin resistant
- High transformation efficiency

Applications

- Suitable for genomic DNA cloning
- Allow large inserts
- Cloning of methylated cytosine or adenine containing DNA
- Blue/white screening

Efficiency

> **5 x 10^7 cfu/µg**

Recommended for:

- Subcloning
- Genomic DNA cloning

> **2 x 10^8 cfu/µg**

Recommended for:

- Cloning of large inserts
- Genomic DNA cloning

Do not store the cells in liquid nitrogen!

-70ºC

 # FYE507-10VL (10 preps)
Efficiency >5 x 10^7 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE507-80VL (80 preps)
Efficiency >5 x 10^7 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE508-10VL (10 preps)
Efficiency >1 x 10^8 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE508-80VL (80 preps)
Efficiency >1 x 10^8 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE507-96WL (96 preps)
Efficiency >2.5 x 10^7 cfu/µg
50 µl/well 96 wells

Related Products

- HiYield Plasmid Mini Kit 2.0 1-4
- YEAtaq DNA Polymerase 2-1
- T&A™ Cloning Kit 3-14
- Glass Plating Beads 3-26

ECOS™ 2163 Competent Cells

Strain: GM2163

-70°C

 # FYE807-10VL (10 preps)
Efficiency >1 x 10^7 cfu/µg
100 µl/vial 10 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE807-80VL (80 preps)
Efficiency >1 x 10^7 cfu/µg
100 µl/vial 80 vials
Control Plasmid (pUC19) 5 µl (10^{-4} µg/µl)

 # FYE807-96WL (96 preps)
Efficiency >5 x 10^6 cfu/µg
50 µl/well 96 wells

Description

GM2163 is an *E. coli* K12 strain, which is deficient in both *dam* and *dcm* genes thus is suitable for the propagation of plasmid or cloned DNA to be cut with Dam or Dcm-sensitive restriction enzymes. This strain is not recommended as a host for primary cloning/ligation since the *dam* mutation can result in higher mutation rates and a reduction in the transformation efficiency.

Genotype

F$^-$ *ara*$^-$*14 leuB6 thi*$^-$*1 fhuA1 lacY1 tsx*$^-$*78 galK2 galT22 supE44 rpsL1/6(strr) xyl*$^-$*5 mtl*$^-$*1 dam1/:Tn9 (camr) dcm*$^-$*6 mcrB1 hsdR2*(rk$^-$mk$^+$) *mcrA*

Features

- Chloramphenicol resistant
- Not suitable for blue/white screening
- Not recommended as a host for primary cloning/ligation

Applications

- Propagation of plasmid free of Dam and Dcm methylations

Efficiency

> **1 x 10^7 cfu/µg**

Recommended for:

- Propagation of plasmid to be cut with Dam or Dcm-sensitive restriction enzymes

Related Products

- HiYield Plasmid Mini Kit 2.0 1-4
- YEAtaq DNA Polymerase 2-1
- T&A™ Cloning Kit 3-14
- Glass Plating Beads 3-26

Do not store the cells in liquid nitrogen!

ECOS™ St

Strain:HB101 Derived

Description

ECOS™ St competent cells is a strain derived from HB101 and suitable for cloning unstable inserts such as lentiviral DNA with LTR (Long terminal repeat). There are two transformation efficiencies of this strain in ECOS™ product line. If you want to transform longer plasmids, plasmid with a kanamycin selection system, or get maximum quantity colonies, you can choose HYE007-S08 which the efficiency is $1*10^9$ cfu/μg.

Genotype

F^- mcrB mrr hsdS20(rB^- ,mB^-) recA13 supE44 ara-14 galK2 lacY1 proA2 rpsL20(Str^R) xyl-5 λ^- leu mtl-1

Features

ECOS™ St carry the recA13 mutation, which lowers nonspecific recombination and helps maintain unstable inserts like lentiviral vectors with direct repeats.

Applications

- Lentiviral/Retroviral construct
- Unstable sequence cloning
- Direct replacement for Invitrogen Stbl3™ and Lucigen Endura™

*The trademarks belong to Thermo Fisher and Lucigen.

Efficiency

> **1 x 10^8 cfu/μg**

Recommended for:

- Cloning unstable inserts
- General cloning

> **1 x 10^9 cfu/μg**

Recommended for:

- High efficiency cloning
- Cloning unstable inserts
- General cloning

Do not store the cells in liquid nitrogen!

-70ºC

 # FYE307-10VL (10 preps)
Efficiency >1 x 10^8 cfu/μg
100 μl/vial 10 vials
Control Plasmid (pUC19) 5 μl (10^{-4} μg/μl)

 # FYE307-80VL (80 preps)
Efficiency >1 x 10^8 cfu/μg
100 μl/vial 80 vials
Control Plasmid (pUC19) 5 μl (10^{-4} μg/μl)

 # FYE309-10VL (10 preps)
Efficiency >1 x 10^9 cfu/μg
100 μl/vial 10 vials
Control Plasmid (pUC19) 5 μl (10^{-4} μg/μl)

 # FYE309-80VL (80 preps)
Efficiency >1 x 10^9 cfu/μg
100 μl/vial 80 vials
Control Plasmid (pUC19) 5 μl (10^{-4} μg/μl)

Related Products

- HiYield Plasmid Mini Kit 2.0 1-4
- YEAtaq DNA Polymerase 2-1
- T&A™ Cloning Kit 3-14
- Glass Plating Beads 3-26

ECOS™ SONIC Competent Cells

Strain:BL21(DE3) Derived

 # FYE907-5VL (5 preps)

Efficiency > 1 x 10^8 cfu/µg

100 µl/vial	5 vials
Control Plasmid (pUC19)	5 µl (10^{-4} µg/µl)

 # FYE907-20VL (20 preps)

Efficiency > 1 x 10^8 cfu/µg

100 µl/vial	20 vials
Control Plasmid (pUC19)	5 µl (10^{-4} µg/µl)

Description

ECOS™ Sonic pLysS competent cells is the derivative of BL21(DE3) pLysS strain. It inherits the protein expression, and the fast-growing feature from its parent strain and pLysS strain can express T7 lysozyme to reduce the activity of T7 RNA polymerase that allows the host including toxic gene under the control of T7 promoter not to be expressed until induction. The further deletion of endA and recA improve the quality of plasmid DNA and enable the plasmid extraction in 3-6 hours growing.

T&A Expression Kit (FYC201-10P) is recommended for ECOS™ Sonic; it combines the primary cloning of PCR product, and the subcloning for protein expression make the experiment easier and faster.

GenoType

F^- ompT $hsdS_B$ (r_B^- m_B^-) gal dcm (DE3)ΔendA ΔrecA pLysS (Cam^R)

FeaTures

- Protein expression and cloning in one strain
- Reduced recombination and DNA degradation
- Protease deficiency for better protein yields

ApplicaTions

- T7-driven protein expression
- Toxic or tightly regulated gene expression
- Clone → express without strain switching

Efficiency

> **1 x 108 cfu/µg**

Recommended for:

- Recombinant protein expression
- Subcloning

Related Products

- HiYield Plasmid Mini Kit 2.0 1-4
- YEAtaq DNA Polymerase 2-1
- T&A™ Cloning Kit 3-14
- T&ATM Expression Vector 3-17
- Glass Plating Beads 3-26

Do noT sTore The cells in liquid niTroGen!

T&A™ Cloning Kit
T&A™ Cloning Kit II

Description

Molecular cloning assisted by vectors is the most popular and common method to obtain genes of interest. Yeastern Biotech's T&A™ Cloning Kit offers a quick, reliable and efficient method for cloning a variety of DNA sequences.

The T&A™ Cloning Kit (**FYC001-20P**) contains the T&A™ Cloning Vector and all the reagents needed for ligation. It is a convenient pack for cloning PCR product generated using thermostable DNA polymerases, such as *YEA*taq DNA polymerase, which add a single terminal 3'-dA nucleotide overhang. After ligation, the mixture can be used directly for transformation into competent cells (ECOS™) or be purified first to achieve higher transformation efficiency.

Recently, YB has designed a new cloning vector for user convenience. The new T&A™ Cloning Vector II (**FYC101-20P**) consist of 2 *Eco*R I cutting sites (441, 500) within the multiple cloning site.

Features

- Fast ligation, completed in only 5 minutes
- High transformation efficiency
- More accurate results
- Accept a wide range of inserts with different sizes
- Two types of ligation buffers provided for your convenience
- Allow blue/white screening
- Contain ampicillin marker for antibiotic selection
- Include M13 primer sites for convenient sequencing

Applications

Cloning of terminal 3'-dA nucleotides overhang PCR products up to 5 kb

Quality Control

- DNA concentration of the vectors is 25 ng/µl
- The absorbance ratio (A_{260}/A_{280}) is between 1.6~2.0
- The size of the vectors is about 2.7 kb
- The colony number of background control is less than 50 when the transformation efficiency of competent cells is 1×10^8 cfu/µg DNA
- The colony number ratio of self-ligation control to positive control is less than 15%
- The colony number of positive control is more than 500 when the transformation efficiency of competent cells is 5×10^8 cfu/µg DNA
- The ligation correctness with the control insert into the vectors is more than 87.5%

-20ºC

 # FYC001-20P (20 preps)

T&A™ Cloning Kit

T&A™ Cloning Vector	40 µl (25 ng/µl)
Control Insert DNA	10 µl (10 ng/µl)
yT4 DNA Ligase	20 µl
10× Ligation Buffer A	50 µl
10× Ligation Buffer B	50 µl
Forward Primer (M13-F)	50 µl (10 µM)
Reverse Primer (M13-R)	50 µl (10 µM)

 # FYC002-20P (20 preps)

T&A™ Cloning Vector	40 µl (25 ng/µl)
Control Insert DNA	10 µl (10 ng/µl)

 # FYC101-20P (20 preps)

T&A™ Cloning Kit II

T&A™ Cloning Vector II	40 µl (25 ng/µl)
Control Insert DNA	10 µl (10 ng/µl)
yT4 DNA Ligase	20 µl (2 U/µl)
10× Ligation Buffer A	50 µl
10× Ligation Buffer B	50 µl
Forward Primer (M13-F)	50 µl (10 µM)
Reverse Primer (M13-R)	50 µl (10 µM)

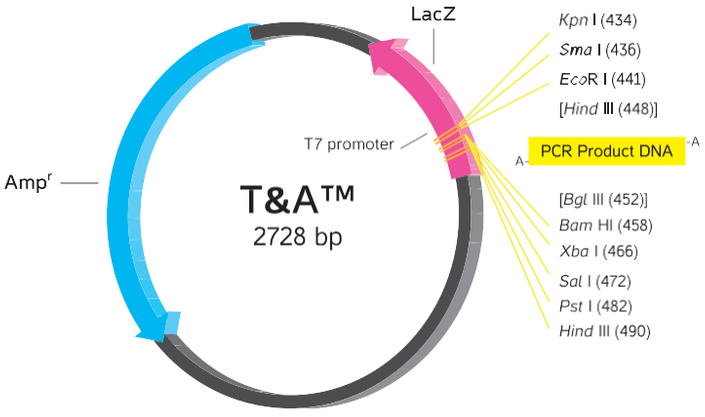
 # FYC102-20P (20 preps)

T&A™ Cloning Vector II	40 µl (25 ng/µl)
Control Insert DNA	10 µl (10 ng/µl)

Related Products

- YEA Ladder DNA Markers 1-12
- YEAtaq DNA Polymerase 2-1
- Deoxy+ HiSpec Reverse Transcriptase 2-5
- Deoxynucleotides (dNTPs) 2-10
- ECOS™ Competent cells 3-1

Map and Sequence reference points of the T&A™ Cloning Vector



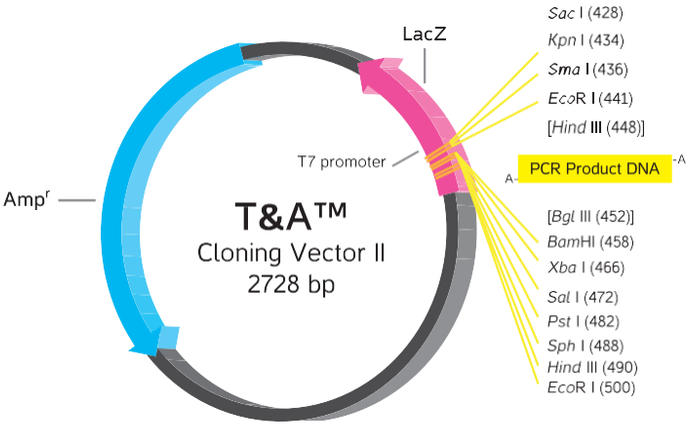
Multiple Cloning region	434 to 496
*Lac*Z start codon	511
*Lac*Z operator	531 to 548
*Lac*Z gene	511 to 149
Amp^r gene	2528 to 1671
T7 promoter	402 to 439
M13 forward primer	359 to 375
M13 reverse primer	507 to 528
β-lactamase coding region	1524 to 2528
Lac operon sequences	239 to 398, 488 to 725

* Before the insert incorporate into the T&A™ Cloning Vector, there is only one *Hin*d III site and no *Bgl* II site. After the incorporation, the T and A nucleotide on the insert will complement the sequence on the vector and generate these two new sites. This merit of T&A™ Cloning Vector makes cloning more economic and convenient.

```
                                                                  Kpn I  Sma I      EcoR I      Hind III
                          M13 Forward Primer      T7 Promoter
301  TACGCCAGCT  GGCGAAAGGG  GGATGTGCTG  CAAGGCGATT  AAGTTGGGTA
     ATGCGGTCGA  CCGCTTTCCC  CCTACACGAC  GTTCCGCTAA  TTCAACCCAT

351  ACGCCAGGGT  TTTCCCAGTC  ACGACGTTGT  AAAACGACGG  CCAGTGAATT
     TGCGGTCCCA  AAAGGGTCAG  TGCTGCAACA  TTTTGCTGCC  GGTCACTTAA

401  GTAATACGAC  TCACTATAGG  GCGAGCTCGG  TACCCGGGCG  AATTCCAAGC
     CATTATGCTG  AGTGATATCC  CGCTCGAGCC  ATGGGCCCGC  TTAAGGTTCG

                  Insert      Bgl II    BamH I    Xba I     Sal I     Pst I
451  T T          DNA      --AGATCTGGAT  CCCCTCTAGA  GTCGACCTGC  AGGCATGCAA  --
     A A-                  TCTAGACCTA  GGGGAGATCT  CAGCTGGACG  TCCGTACGTT

     Hind III
493  GCTTGGCGTA  ATCATGGTCA  TAGCTGTTTC  CTGTGTGAAA  TTGTTATCCG
     CGAACCGCAT  TAGTACCAGT  ATCGACAAAG  GACACACTTT  AACAATAGGC
                             M13 Reverse Primer
```

Enzyme	Position	Enzyme	Position	Enzyme	Position	Enzyme	Position	Enzyme	Position
Aat II	2664	*Asp*E I	1742	*Cfr*10 I	1822	*Mam* I	457	*Ssp* I	2546
*Acc*65 I	430	*Ava* I	434	*Dra* II	2718	*Nar* I	237	*Xba* I	466
Acc I	473	*Ban* II	428	*Eam*1105 I	1742	*Nde* I	185	*Xma* I	434
Acs I	441	*Bam*H I	458	*Ecl*136 II	426	*Pst* I	482	*Xmn* I	2341
Afl III	849	*Bcg* I	2281	*Eco*0109 I	2718	*Sac* I	428		
Ahd I	1742	*Bpm* I	1812	*Eco*R I	441	*Sal* I	472		
*Alw*N I	1265	*Bsa*B I	457	*Hinc* II	474	*Sap* I	733		
Apo I	441	*Bsa* I	1803	*Hind* II	474	*Sca* I	2222		
*Asp*700	2341	*Bsp*M I	485	*Kas* I	236	*Sma* I	436		
*Asp*718	430	*Bsr*F I	1822	*Kpn* I	434	*Sph* I	488		

Map and Sequence reference points of the T&A™ Cloning Vector II



Multiple Cloning region	434 to 504
*Lac*Z start codon	511
*Lac*Z operator	531 to 548
*Lac*Z gene	511 to 149
Amp^r gene	2528 to 1671
T7 promoter	402 to 439
M13 forward primer	359 to 375
M13 reverse primer	507 to 528
β-lactamase coding region	1524 to 2528
Lac operon sequences	239 to 398, 488 to 725

* Before the insert incorporate into the T&A™ Cloning Vector II, there is only one *Hind* III site and no *Bgl* II site. After the incorporation, the T and A nucleotide on the insert will complement the sequence on the vector and generate these two new sites. This merit of T&A™ Cloning Vector II makes cloning more economic and convenient.

```
301  TACGCCAGCT      GGCGAAAGGG  GGATGTGCTG  CAAGGCGATT  AAGTTGGGTA
     ATGCGGTCGA      CCGCTTTCCC  CCTACACGAC  GTTCCGCTAA  TTCAACCCAT

                M13 Forward Primer
351  ACGCCAGGGT      TTTCCCAGTC  ACGACGTTGT  AAAACGACGG  CCAGTGAATT
     TGCGGTCCCA      AAAGGGTCAG  TGCTGCAACA  TTTTGCTGCC  GGTCACTTAA

                T7 Promoter                 Sac I  Kpn I  Sma I  EcoR I  Hind III
401  GTAATACGAC      TCACTATAGG  GCGAGCTCGG  TACCCGGGCG  AATTCCAAGC
     CATTATGCTG      AGTGATATCC  CGCTCGAGCC  ATGGGCCCGC  TTAAGGTTCG

                                 Bgl II  BamH I  Xba I  Sal I  Pst I  Sph I
451  T T  Insert     -A GATCTGGAT  CCCCTCTAGA  GTCGACCTGC  AGGCATGCAA
     A A- DNA        T CTAGACCTA  GGGGAGATCT  CAGCTGGACG  TCCGTACGTT

     Hind III  EcoR I
491  GCTTGGCGGA      ATTCTGGTCA  TAGCTGTTTC  CTGTGTGAAA  TTGTTATCCG
     CGAACCGCCT      TAAGACCAGT  ATCGACAAAG  GACACACTTT  AACAATAGGC
                                 M13 Reverse Primer
```

Enzyme	Position	Enzyme	Position	Enzyme	Position	Enzyme	Position	Enzyme	Position
Aat II	2664	*Ava* I	434	*BsrF* I	1822	*Kas* I	236	*Sap* I	733
*Acc*65 I	430	*Bam*H I	458	*Cfr*10 I	1822	*Kpn* I	434	*Sca* I	2222
Acc I	473	*Ban* II	428	*Dra* II	2718	*Mam* I	457	*Sma* I	436
Afl III	849	*Bcg* I	2281	*Eam*1105 I	1742	*Nar* I	237	*Sph* I	488
Ahd I	1742	*Bpm* I	1812	*Ecl*136 II	426	*Nde* I	185	*Ssp* I	2546
*Alw*N I	1265	*Bsa*B I	457	*Eco*0109 I	2718	*Pst* I	482	*Xba* I	466
*Asp*700	2341	*Bsa* I	1803	*Hinc* II	474	*Sac* I	428	*Xma* I	434
*Asp*718	430	*Bsp*M I	485	*Hind* II	474	*Sal* I	472	*Xmn* I	2341
*Asp*E I	1742								

T&A™ Expression Vector

-20°C

 # FYC211-10P (10 preps)

T&A™ Expression Vector	20 µl (25 ng/µl)
Control Insert DNA	10 µl (10 ng/µl)

Description

Molecular cloning assisted by vectors is the most popular and common method to obtain genes of interest. Yeastern Biotech's T&A™ Expression Vector offers a quick, reliable and efficient method for cloning a variety of DNA sequences.

The T&A™ Expression Vector (**FYC211-10P**) designed for direct cloning of PCR-amplified inserts (Taq polymerase products with 3′ adenine (A) overhangs.) The vector contains complementary 3′ thymine (T) overhangs to facilitate ligation without the need for restriction enzyme digestion. This vector drives recombinant protein expression under control of T7 promoter in *Escherichia coli*. Includes optional fusion 6×His tag sequences to enable affinity purification of the expressed protein. After ligation, the mixture can be used directly for transformation into competent cells (ECOS™ 21 or ECOS™ SONIC) to protein expression.

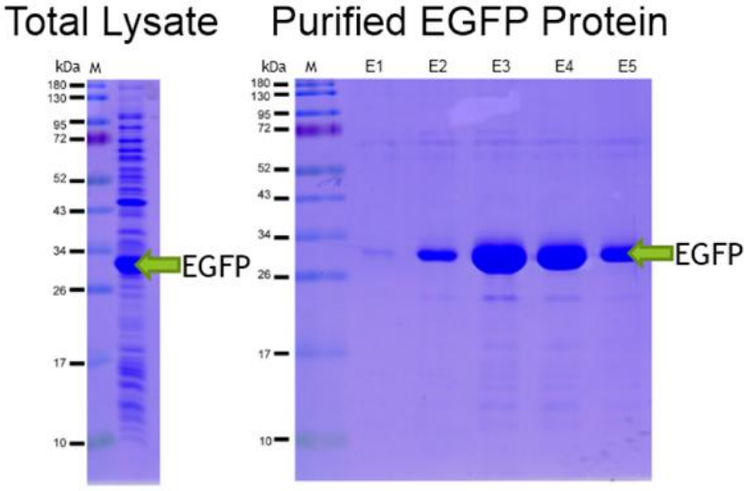
Features

- Able to express protein after TA Cloning
- His-tagged for purifying protein
- T7 promoter for highly expressing protein.
- Ampicillin marker for antibiotic and for fast operation of ECOS

Applications

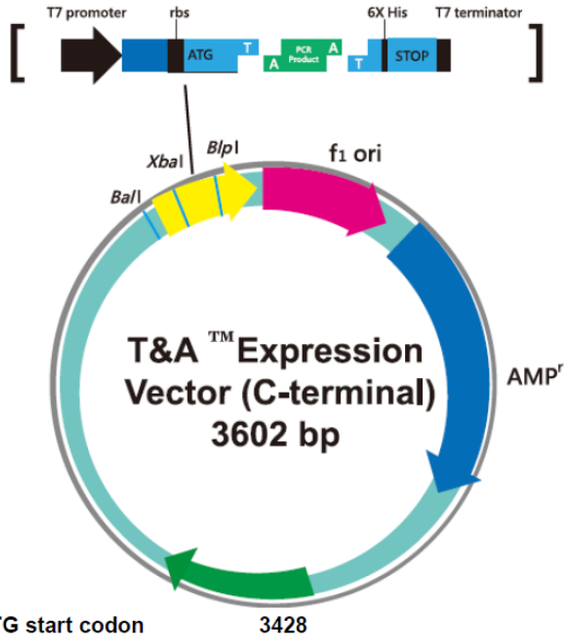
- Recombinant Protein Production
- Rapid Screening of PCR Products

Result



Related Products

- YEAtaq DNA Polymerase 2-1
- Deoxy+ HiSpec Reverse Transcriptase 2-5
- Deoxynucleotides (dNTPs) 2-10
- ECOS™ Competent cells 3-1



ATG start codon	3428
T7 promoter	3348 ~ 3366
T7 terminator	3530 ~ 3577
6x His (His Tag)	3446 ~ 3463
Stop codon	3464
Amp^r gene	599 ~ 1459
Ori	1630 ~ 2218
f1 ori	12 ~ 467

DNA sequence of multiple cloning sites in T&A Expression Vector (C-terminal)

```
                                        Bgl II                          T7 promoter
3301  CCCGTGGCCA GGACCCAACG CTGCCCGAGA TCTCGATCCC GCGAAATTAA
      GGGCACCGGT CCTGGGTTGC GACGGGCTCT AGAGCTAGGG CGCTTTAATT

                                                    Xba I
3351  TACGACTCAC TATAGGGAGA CCACAACGGT TTCCCTCTAG AAATAATTTT
      ATGCTGAGTG ATATCCCTCT GGTGTTGCCA AAGGGAGATC TTTATTAAAA

                  rbs
3401  GTTTAACTTT AAGAAGGAGA TATACCCATG AAT  Insert DNA  ACCGCTG
      CAAATTGAAA TTCTTCCTCT ATATGGGTAC TTA              TGGCGAC
                                        Met Asn         ThrAlaG

                  His Tag
3441  GCGAGCACCA CCACCACCAC CACTGAGATC CGGCTGCTAA CAAAGCCCGA
      CGCTCGTGGT GGTGGTGGTG GTGACTCTAG GCCGACGATT GTTTCGGGCT
      lyGluHisHi sHisHisHis HisEnd

                                  Blp I   T7 terminator primer
3491  AAGGAAGCTG AGTTGGCTGC TGCCACCGCT GAGCAATAAC TAGCATAACC
      TTCCTTCGAC TCAACCGACG ACGGTGGCGA CTCGTTATTG ATCGTATTGG

                  T7 terminator
3541  CCTTGGGGCC TCTAAACGGG TCTTGAGGGG TTTTTTGCTG AAAGGAGGAA
      GGAACCCCGG AGATTTGCCC AGAACTCCCC AAAAAACGAC TTTCCTCCTT
```

Restriction enzymes that ONE Cut T&A Expression Vector (C-terminal)

Enzyme	Position	Enzyme	Position	Enzyme	Position	Enzyme	Position	Enzyme	Position
AccI	2511	Bbr7I	3155	BseYI	1976	HaeIV	1392	PstI	1146
AfeI	3028	BbsI	3155	BsgI	3105	MscI	3311	PvuI	1020
AflIII	2280	BglI	1273	BsmBI	2633	NaeI	143	PvuII	2691
AhdI	1392	BglII	3334	BstZ17I	2511	NgoMIV	143	SapI	2403
AloI	302	BlpI	3525	BtgI	3308	Nli3877I	3330	ScaI	909
AlwNI	1869	Bpu10I	3175	DraIII	249	PciI	2280	StyI	3547
AvaI	3330	BsaHI	851	FspAI	3302	PfoI	2638	Tth111I	2538
BanII	173	BsaXI	300	GdiII	999	PsiI	374	XbaI	3392

YB Rapid Ligation Kit

-20°C

 # FYC003-100R (100 rxns)

yT4 DNA Ligase	100 µl (3 U/µl)
10× Ligation Buffer A	200 µl
10× Ligation Buffer B	200 µl

Storage Buffer

Tris-HCl (pH7.5)	20 mM
KCl	50 mM
DTT	1 mM
EDTA	0.1 mM
Glycerol stabilizers	50%

10× Ligation Buffer A

Tris-HCl	0.4 mM
$MgCl_2$	0.1 mM
DTT	0.1 mM
ATP (pH5.0 at 25°C)	5 mM

The performance of this buffer depends on the integrity of ATP. Store the buffer in small aliquots at -20°C to minimize degradation of ATP and DTT

10× Ligation Buffer B

Buffer contains an enhancer which dramatically increases ligation efficiency for blunt end DNA

Description

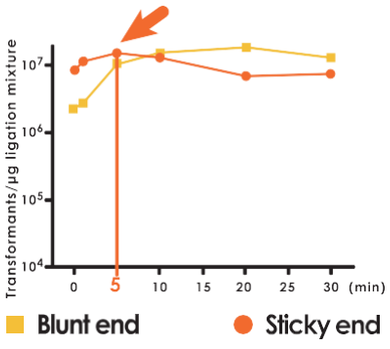
Yeastern's yT4 DNA ligase catalyzes the joining of two strands of DNA between the 5' – phosphate and the 3' – hydroxyl groups of adjacent nucleotides in either a cohesive-ended or blunt-ended termini. The enzyme also repairs single-strand nicks in duplex DNA, RNA or DNA/RNA hybrids. YB Rapid Ligation Kit is designed for efficient ligation of DNA inserts into vectors in just 5 minutes.

Features

- Either sticky- or blunt-end, ligation can be achieved within 5 minutes
- Reaction mixture can be used directly for bacterial transformation

Applications

- Join double-strand DNA with cohesive or blunt termini
- Join oligonucleotide linkers to DNA sequence with blunt end
- Repair nicks in duplex DNA, RNA, or DNA-RNA hybrids



Combo Products

Quality Control

Undetectable endo-deoxyribonuclease and exo-deoxyribonuclease activities, undetectable ribonuclease activity, undetectable degradation of labeled oligonucleotide, passed the test of the capability to join cohesive- and blunt-ended DNA fragments.

SCOS Transformation Kit

Description

The *SCOS* (***S**accharomyces **c**erevisiae **o**ne-**s**tep*) Transformation Kit provides a simple and fast one-step / one-tube method for transforming the yeast, *S. cerevisiae* with a linear or circular plasmid DNA. The transformation efficiency varies based on the yeast strain used, the efficiency of plasmid incorporated into the host chromosome, the selection marker used and the transformation procedure. In general, the entire procedure can be completed in one hour, and routinely provides a transformation efficiency of 10^3 ~ 10^6 transformants/mg of plasmid DNA.

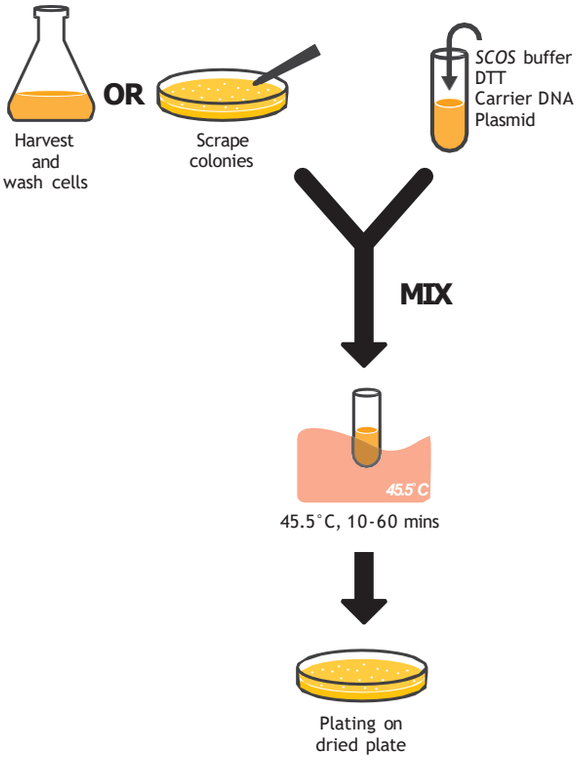
Features

- High throughput transformation
- Instant competent cell preparation
- An one-step, one-tube and 10~60 minutes protocol for transforming the baker's yeast (*Saccharomyces cerevisiae*)
- Simple (Mix → Heat shock → Plating)
- Suitable for yeast cells from colonies, broth or any growth phase
- Repeatable efficiency, always reach efficiency of 10^3 ~ 10^6 transformants/μg DNA

Applications

- Transformation of *S. cerevisiae*

Protocol



Quality Control

The transformation efficiency is checked in a lot-to-lot basis to ensure that it is above minimum 10^3 transformants/μg of plasmid DNA.

4ºC

 # FYY101-120P (120 preps)

SCOS Transformation Buffer	12 ml
Carrier DNA	0.6 ml
DTT Powder	0.185 g

YLEX Yeast Expression Kit

4ºC

 # FYY201-1KT

Yarrowia lipolytica Yeast Strain: Po1g **(# FYY202-1SB)**	1 stab
pYLEX1 – Expression Vector **(# FYY203-5UG)**	5 µg
pYLSC1 – Secretion Vector **(# FYY204-5UG)**	5 µg
Primer 6560 F Primer 6904 R **(# FYY205-500UL)**	250 µl 250 µl
YLOS Yeast Transformation Kit **(# FYY301-120P)**	1 kit

DescripTion

YLEX Yeast Expression Kit based on INRA INAPG licensed patent* provides an easy approach for cloning and expressing a gene of interest in the yeast, *Yarrowia lipolytica*. Using this kit, high level of heterologous protein may be expressed intracellularly or be secreted from the cell into medium by selecting the supplied expression vector pYLEX1 or pYLSC1.

Vectors provided in the *YLEX* contain a strong hybrid promoter carrying four tandem copies of upstream activator sequences (UAS1B) fragment from p*XPR2* and a minimal p*LEU2* fragment. Unlike the frequently used *Yarrowia* promoter (p*XPR2*), this stable hybrid promoter directs protein expression constantly without multiple influences by nutritional and environmental factors in medium.

When a constructed plasmid with the hybrid promoter followed by a cloned gene of interest is linearized by the selected restriction enzyme, it becomes an expression cassette that can integrate into the *Y. lipolytica* genome by homologous recombination within the process of transformation. The successful transformants are ready for expression or secretion of recombinant protein depending on whether secretion signal appears on the plasmid.
For more information, please read the articles cited in this catalog.

** INRA (Institut National de la Recherche Agronomique) and INAPG (Institut National Agronomique Paris-Grignon*

FeaTures

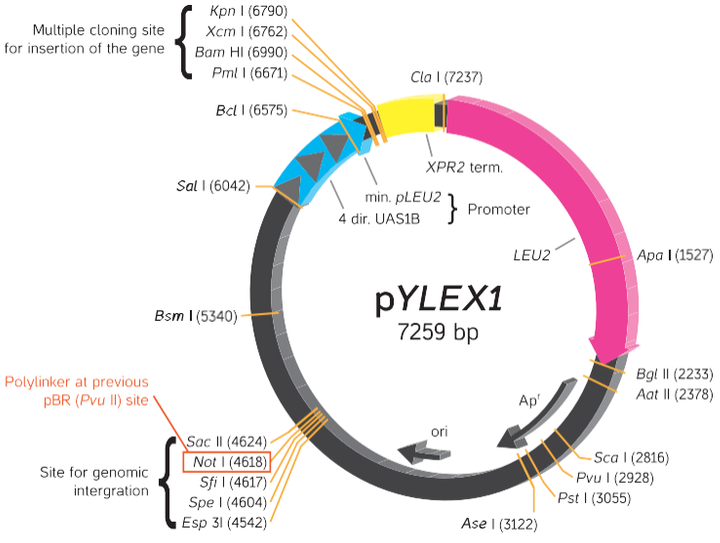
- **Safe:** *Y. lipolytica* was classified as GRAS (Generally Regarded As Safe) by the US FDA (Food and Drug Administration)
- **Simple:** a simple tool for expressing heterologous protein
- **Easy manipulation:** like *E. coli* and *S. cerevisiae*
- **Stable:** strong stability in vectors and constructed plasmids
- **Reliable:** vectors integrated at the same site in genome
- **Flexible:** both expression and secretion vector provided (proteins may be expressed intracellularly or be secreted from the cell into medium)
- **High growth ability:** high secretion capacity & high product yield
- **Less protein degraded:** no extracellular protease synthesized by a special protease-deficient Yarrowia strain
- **Mass production:** industrial mass production of recombinant proteins
- **Less hyperglycosylation:** able to perform post-translational processing of complex proteins, unlike *S. cerevisiae*

ApplicaTions

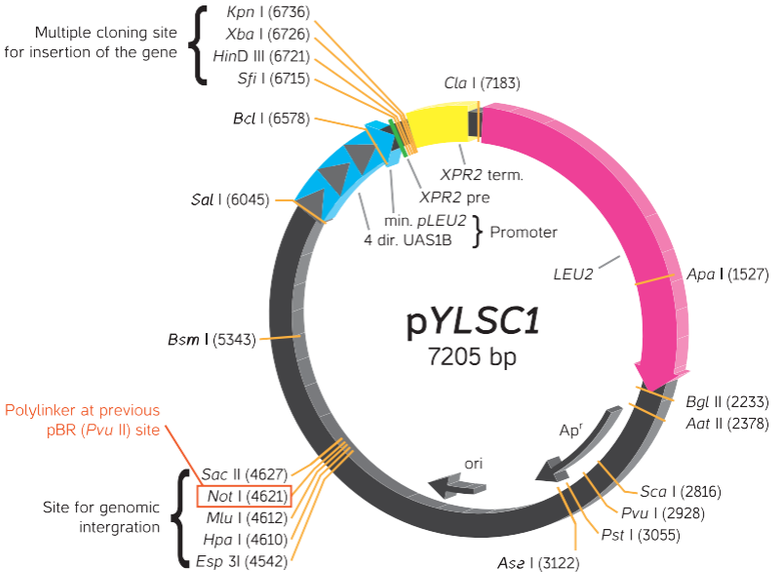
Heterologous protein expression, either intracellular or extracellular depends on selected vector in GRAS yeast.

Yarrowia Vectors

Two vectors (pYLEX1 and pYLSC1) are included in this kit, and they can be used for either intracellular expression or secretion of proteins of interest in *Y. lipolytica*. Generally speaking, if the target protein is cytosolic and non-glycosylated, the pYLEX1 vector is a better choice. If the protein of your interest is normally glycosylated or secreted, you may wish to choose the pYLSC1 vector.



The pYLEX1 expression vector (7259 bp) contains the strong hybrid promoter (hp4d) carrying four tandem copies of upstream activator sequences (UAS1B) fragment from p*XPR2* and a minimal p*LEU2* fragment. The multiple cloning site and the *XPR2* transcription terminator lie immediately downstream of 3' site of hp4d promoter, followed by a leucine selection marker gene (*LEU2*). The vector can be linearized by digestion with *Not*I to create a linear DNA fragment capable of inserting into the *Y. lipolytica* genome.



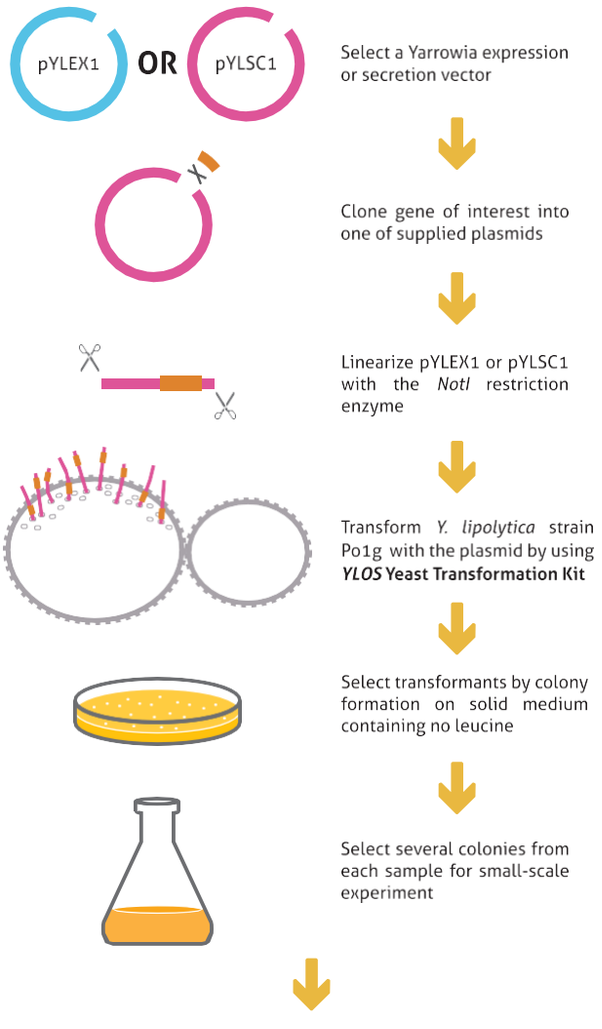
The pYLSC1 secretion vector (7205 bp) contains the hybrid promoter (hp4d) and a secretion signal (*XPR2* pre region). The multiple cloning site and the p*XPR2* transcription terminator lie immediately downstream of 3' site of *XPR2* pre region, followed by a leucine selection marker gene (*LEU2*). The vector can be linearized by digestion with *Not*I to create a linear DNA fragment capable of inserting into the *Y. lipolytica* genome.

Yeast Strain

The strain Po1g of *Yarrowia lipolytica* is a derivative of the wild-type strain W29 (ATCC 20460) by a series of genetic modifications. Briefly, the original *URA3* gene in the W29 strain was disrupted with the *SUC2* gene from *Saccharomyces cerevisiae*, followed by the introduction of a deletion in the *LEU2* gene. Furthermore, the deletion of the *XPR2* and *AXP* genes ensures that Po1g is unable to produce any extracellular protease. In order to allow easy integration of pBR-based expression/secretion vectors, a pBR322 docking platform was integrated at the *URA3* locus.

Strain	Genotype	Phenotype
Po1g	*Mat*A, *leu*2-270, *ura*3-302::URA3, *xpr*2-332, *axp*-2	Leu-, ΔAEP, ΔAXP, Suc+, pBR platform

Protocol

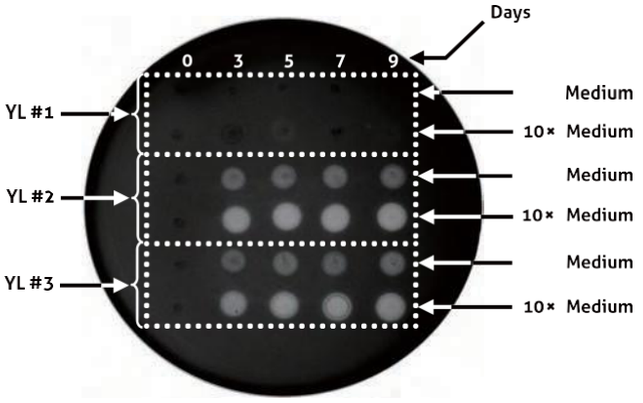


Quality Control

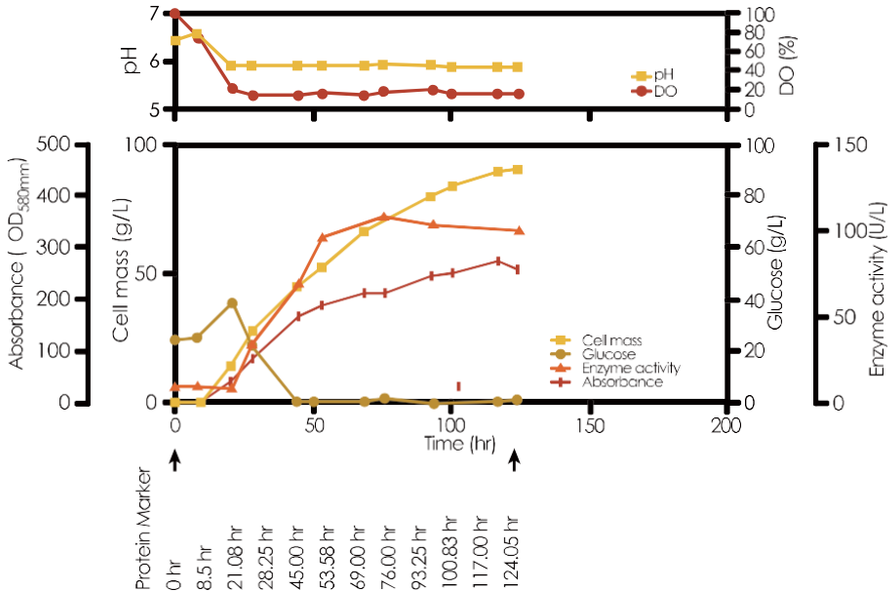
Two plasmids, pYLEX1+*AMY1* (mouse salivary α-amylase gene) and pYLSC1+*AMY1*Δ (*AMY1* without its native secretion signal) are used to ensure functional transformation kit and correct gene expression in the host. Contamination test is also performed to ensure no other microbial contamination.

Experimental Data

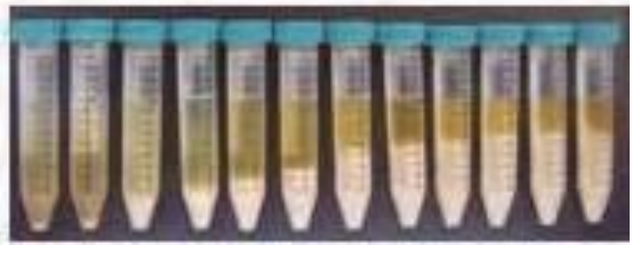
The figure shows that filtered culture medium from batch culture of both amylase-encoding transformants (YL #2 and #3) could digest starch in solid medium agar, and subsequently produce clear zones. In contrast, medium from the culture of yeast transformed with vector only (YL #1) did not exhibit the same result. It indicates that cloning of both a-amylase gene (AMY1) into pYLEX1 and a-amylase gene without its secretion signal peptide (AMY1D) into pYLSC1 was successful by using the *YLEX* Yeast Expression Kit. In both cases, active a-amylase was efficiently secreted into the culture medium.



A time course study of capacity of high cell density fermentation and secretion of recombinant enzyme in the *YLEX* system (*Yarrowia lipolytica* expression system).



Over production of heterologous protein (SDS-PAGE analysis):
Secretion profile of recombinant enzyme in supernatant, samples were collected by time course, 10 µl/lane.



High cell density fermentation:
High cell density fermentation in a 14L fed-batch fermenter, cells were centrifuged (3,000 rpm) by time-course.

* ***YLEX* Yeast Expression Kit (product spec.)**
Yarrowia lipolytica yeast strain: Po1g; pYLEX1- expression vector 1 stab; pYLSC1- secretion vector 5 µg; Primer 6560F (for sequencing purpose) 250 µl; Primer 6904F (for sequencing purpose) 250 µl; *YLOS* Yeast Transformation Kit 1 kit (120 rxns).

* *YLEX* Yeast Expression Kit is produced by **Yeastern Biotech Co., Ltd.** with patent protected, which is authorized with the non-exclusive manufacturing and distribution worldwide by the proprietary property of Institute National de la Recherche Agronomique (INRA), France.

YLOS Yeast Transformation Kit

4ºC

 # FYY301-120P (120 preps)

YLOS Transformation Buffer	12 ml
Carrier DNA	0.6 ml
DTT Powder	0.185 g

Description

The *YLOS* (*Yarrowia lipolytica* **o**ne-**s**tep) Yeast Transformation Kit provides a simple and fast one-step/one-tube method to transform *Yarrowia* cells cultured in either solid agar or liquid broth. They were designed for various strains of *Y. lipolytica* and vectors. Transformation efficiencies with *Y. lipolytica* will vary based on the yeast strain used, a linear or circular plasmid DNA, the efficiency of plasmid integration into the host chromosome, and the transformation procedure chosen. Generally, the entire procedure may be completed in 60 mins, and routinely provides a transformation efficiency of 10^3 ~ 10^5 transformants/µg of plasmid DNA.

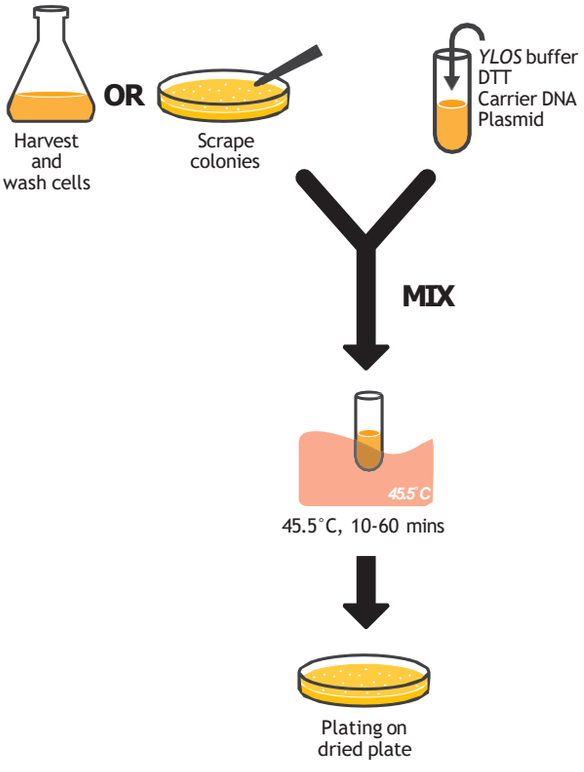
Features

- Instant preparation of competent cells
- An one-step, one-tube and 10 ~ 60 minutes protocol for transforming
- The oleaginous yeast, *Yarrowia lipolytica*
- Simple (Mix → Heat shock → Plating), suitable for *Yarrowia* yeast
- Cells from colonies, broth or any growth phase
- Repeatable efficiency, always reach efficiency of 10^3 ~ 10^5 transformants/µg DNA

Applications

- Transformation of *Y. lipolytica*

Protocol



Quality Control

The transformation efficiency with the plasmid pYLEX1is checked in a lot-to-lot basis to ensure that it is above minimum 10^3 transformants/µg of plasmid DNA.

Glass Plating Beads (Sterilized)

Description

Sterilized glass plating beads (4 mm) provide an efficient and easy method to achieve optimal spreading on agar plates. The rolling action of the glass beads gently spread the *E. coli* solution (or any bacterial/fungal solution) to reach areas of the plate that are inaccessible to spread. Multiple plates containing beads and *E. coli* solution may be stacked and shaken simultaneously to increase spreading throughout and reduce cell stress. The beads may be recovered by washing with 70% ethanol, then sterilized and dried.

Features

- Pre-sterilized
- No flaming required

Applications

- Bacterial and fungal solution spreading on agar plates
- Plating yeast for two-hybrid screens

Protocol

For regular plating of ECOS™ Competent Cells, add 5 ~ 10 beads immediately after pipetting 50 ~ 100 µl of transformed cells onto each plate. Move the plate back and forth to roll the beads on the surface and change the direction of shaking a few times to ensure even spreading. When the surface of the agar starts to dry on the plate (20 ~ 40 seconds), pour off the beads and the plates are ready for incubation.

- Pre-warmed glass beads at 37°C for ECOS™ warm plating (protocol 2&4, page3-2 protocol)
- Pre-cooled glass beads at 4°C for ECOS™ cold plating (protocol 1&3, page 3-2 protocol)
- Room temperature for *SCOS* and *YLOS* Yeast Transformation Kits

Quality Control

Each lot of beads has to pass contamination test by spreading sterilized water on agar plates containing no selective antibiotics. No bacterial and fugal colonies should be seen after 2 days incubation.

RT

 # FYO001-100G

Sterilized, 4 mm 100g

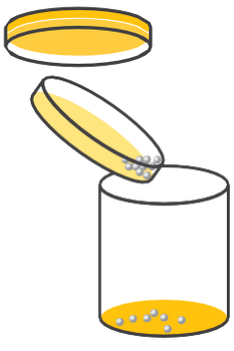
Related Products

- ECOS™ Competent cells 3-1

Protocol

Add beads after pipetting transformed cells onto each plate.

Shake the plate to roll the beads on the surface and change the direction of shaking a few times to ensure even spreading.



When the surface of the agar starts to dry on the plate (20 ~ 40 seconds), pour off the beads and the plates are ready for incubation.

Proteomics

SupraNAse Nuclease

-20ºC

# FYP301-5KU	100 µl
# FYP301-25KU	500 µl
# FYP301-100KU	Powder

Description

SupraNAse (EC: 3.1.30.2), is derived from the bacterium Serratia Marcescens. It cleaves both single and double stranded DNA and RNA, whether linear or circular. This recombinant endonuclease is expressed and purified from E. coli as a non-covalent homo-dimer. Each chain consists of 245 amino acids with a molecular weight of ~29 kD. It is primarily used to remove residual nucleic acid contaminants from biological expression systems and reduce viscosity in cell lysates during purification processes for proteins, vaccines, and antibodies.

Applications

- **Biopharmaceutical manufacturing:** Reduction of host-cell DNA/RNA during downstream processing of recombinant proteins, vaccines, and viral vectors.
- **Viscosity reduction:** Improves filtration, centrifugation, and chromatography by lowering lysate viscosity.
- **Research and laboratory use:** Removal of nucleic acid contamination during protein purification and sample preparation.
- **Industrial biotechnology:** Used in fermentation and cell-lysis workflows to enhance product recovery.

Operating Conditions

The recommended reaction conditions for cleavage by SupraNAse are as follows: 50 mM Tris buffer with 1-2 mM Mg2+ at a pH of 8-9, and a temperature of 37 °C. However, SupraNAse can tolerate high concentrations of reductants such as DTT and denaturants like urea and guanidine hydrochloride, while maintaining its high activity. This versatility allows SupraNAse to be used in various sample conditions.

Preparation of nuclease solution:

- If powder form: To prepare the nuclease solution, add 1 ml deionized water and 1 ml 100% glycerin to each vial containing lyophilized powder, resulting in a solution ranging from 50 U/µL. Gently wash the vial along the wall using a pipette tip. If needed, the vial can be inverted several times with the cap covered, followed by centrifugation for later use or further dilution with a cleavage buffer.
- Sample processing for protein purification: Typically, 100-500 units of SupraNAse are used per gram of cell paste. Add SupraNAse before performing lysis. Incubate the mixture with gentle shaking or rotation for 10-20 minutes at room temperature. If necessary, the enzymatic reaction can be optimized.
- Sample processing for bio-analysis of proteins: For processing animal tissue samples in bio-analysis, sonication on ice is performed in the presence of SupraNAse (50 U/100 µl) using a lysis buffer. Sonication is repeated every 15 minutes for 1 hour, followed by centrifugation at 750 g and 4°C for 5 minutes to remove debris.

Related Products

- ECOS™ Competent cells 3-1
- T&A™ Expression Vector 3-17

Note

OEM Services & Appendix

Competent Cells

Description

We are the world's leading competent cells manufacturing biotechnology company, providing customers from all over the world with reliable and quality competent cells. Yeastern Biotech Co., Ltd. owns the patent of ECOS™ technology (including protocol) exclusively in Canada **(TMA622,671)**, USA **(US 6,864,088, US 7,098,033, US 7,820,443)**, UK **(GB2383582)**, German **(Nr. 102 51 429)**, France **(FR 2832727)**, Taiwan **(I 229696)**, China **(ZL 2005 1 0112590.8)**, Korea **(0604787, 10-1350283)**, and Japan **(4867595)**. Under the patented protocol, transformation with our ECOS™ chemically competent cells can be finished in one step within one minute without the need for SOC recovery step. Therefore, ECOS™ competent cells are the fastest transforming cells worldwide.

In order to meet customer needs, we provide OEM of *E. coli* competent cells using our ECOS™ technology. Any *E. coli* strain can be prepared to become ECOS™ competent cells which can be transformed using our patented protocols. Customers will only need to send the *E. coli* strain to us along with information of its genotype and note for basic culture conditions. Typically, the total procedure can be finished in 30-60 days. However, a minimum order of 160 tubes (100 µl/tube) is required for this service.

Molecular Biology Kits

Description

Yeastern have completed many OEM requests on the development of molecular biology kits, such as competent cells, DNA ladders, DNA polymerases, PCR premixes, RT-PCR premixes, qPCR premixes, pre-stained protein markers, fast DNA detection or diagnostic kits. We sincerely contribute our technologies through OEM services to satisfy customers' requirements.

Yeast Genetic Engineering

Saccharomyces cerevisiae

Yeastern's genetic engineering system with food-grade baker's yeast (*Saccharomyces cerevisiae*) mutants (patent pending) enables secretion or accumulation of high-quality heterologous proteins at either analytical or industrial scales. It is designed to lessen the risk and cost of pharmaceutical and biotechnology companies in high-quality protein production. Currently, we have completed the design and production of more than 20 proteins (peptide hormones, transmembrane proteins, industrial enzymes, nucleic acid binding proteins, drug proteins, viral antigens), and most have shown low glycosylation and high production. For our own, we have successfully produced herbal immunomodulatory proteins and algal SOD using this technology.

Yarrowia lipolytica

Yarrowia lipolytica is classified as GRAS (Generally Regarded As Safe) by the US FDA (Food and Drug Administration). *Y. lipolytica*, like *E. coli* and *S.cerevisiae*, can be manipulated easily and produces proteins with less hyperglycosylation. *Y. lipolytica* genetic engineering system is based on our *YLEX* Yeast Expression Kit, by which high level of heterologous proteins can be expressed intracellularly or be secreted from cells into the medium depending on customers' desires.

Educational Packs

Description

Yeastern manufactures a series of molecular biology products from nucleic acid extraction, amplification to gene cloning. We are able to OEM user-friendly educational packs, aiming to give high school and undergraduate students a fundamental knowledge of life science thus increase their interests in further exploring the fun and excitement of science!

Competent Cells Information

TransFormaTion Efficiency

- Equation for transformation efficiency= transformed colonies (transformants) / µg of plasmid
- **Example :**
  100 µl of competent cells have been transformed with 10-6 µg of pUC19 plasmid. If 550 colonies are observed on the selective plate. The transformation efficiency is:

$$500 / 10^{-6} = 5.5 \times 10^{8} \text{ transformants / µg of pUC19 plasmid}$$

GenoType

Product Name	Strain	Genotype
ECOS™ X / ECOS™ 101	DH5α	F^- endA1 hsdR17(rk^-, mk^-) *supE44 thi-1 λ^-recA1 gyrA96 relA1 Δ(argF-lacZYA)*U169 Φ80d *lacZ* ΔM15 *deoR*
ECOS™ 9-5	JM109	F' *traD/6 proA$^+$ proB$^+$ lacIq Δ(lacZ)*M15 *Δ(lac-proAB) supE44 hsdR17 recA1 gyrA96 thi$^-$1 endA1 relA1 e14$^-$ λ$^-$*
ECOS™ Blue	XL1-Blue	F' *recA1 endA1 gyrA96 thi$^-$1 hsdR17*(rk^-, mk^+) *supE44 λ$^-$ Δ(lac) proAB lacIqZ*ΔM15 *Tn10 (tet^r)*
ECOS™ 21	BL21(DE3)	F^- *hsdS gal (λ cIts857 ind1 Sam7 nin5 lacUV5-T7 gene I)*
ECOS™ 10B	DH10B	F^- *endA1 recA1 galE15 galK16 nupG rpsL ΔlacX74* Φ80d *lacZ* ΔM15 *araD1/9 Δ(lara,leu)7697 mcrA Δ(mrr$^-$hsdRMS$^-$mcrBC) λ$^-$*
ECOS™ 2163	GM2163	F^- *ara$^-$14 leuB6 thi$^-$1 fhuA/1 lacY1 tsx$^-$78 galK2 galT22 supE44 rpsL1/6(strr) xyl$^-$5 mtl$^-$1 dam1/:Tn9 (camr) dcm$^-$6 mcrB1 hsdR2*(rk^-mk^+) *mcrA*
ECOS™ St	HB101 Derived	F^- mcrB mrr hsdS20(rB^- ,mB^-) recA13 supE44 ara-14 galK2 lacY1 proA2 rpsL20(Str^R) xyl-5 λ^- leu mtl-1
ECOS™ SONIC	BL21(DE3) Derived	F^- ompT $hsdS_B$ (r_B^- m_B^-) gal dcm (DE3)ΔendA ΔrecA pLysS (Cam^R)

Nomenclature & Abbreviations

Gene	Description
araD	Arabinose metabolism is blocked due to mutation in L-ribulose-phosphate 4-epimerase.
dam	Elimination of endogenous adenine methylation at GATC sequences.
dcm	Elimination of endogenous cytosine methylation at CCWGG sequences.
DE3	A λ prophage carrying the T7 RNA polymerase gene and $lacI^q$.
deoR	A regulatory gene that allows constitutive expression of deoxyribose synthesis genes; permits uptake of large plasmids.
endA	Eliminate the nonspecific activities digestion of Endonuclease I to obtain a cleaner preparation of DNA.
e14	Excisable prophage-like element, containing mcrA gene, present in K-12 but missing from many derivatives.
F	The F plasmid, a low-copy number and self-transmissible plasmid.

Gene	Description
fhuA	Resistance to phage T1 (ferric hydroxamate uptake) due to mutation in iron uptake receptor.
gal	The ability to metabolize galactose is eliminated.
galE	A mutation which prevents the production of UDP-galactose, increased resistance to phage P1 infection and 2-deoxygalactose. *gal*E15 is a point mutation resulting in a Ser123 → Phe conversion.
galK	A mutation which prevents the metabolization of galactose and are resistant to 2-deoxygalactose. *gal*K16 is an IS2 insertion downstream of the galK start codon.
gyrA	Resistance to the antibiotic nalidixic acid due to a point mutation in DNA gyrase, subunit A.
hsdR, hsdS	DNA without methylation of certain sequences will be recognized as foreign and degraded by EcoK I or EcoB I. hsdR and hsdS recognize different sequences and are encoded by different alleles of hsdRMS. hsdR mutations eliminate restriction but not protective methylation (r-m+), while hsdS mutations eliminate both (r-m-).
lacI^{q}	Mutation of -35 site in upstream promoter of *lacI*, causing overproduction of *lac* repressor, result in turning off expression from Plac more completely.
lacZ	β-galactosidase activity is eliminated.
lacZΔM15	Deletion mutation of the lacZ gene (a.a. 11~41) that allows α complementation of the β-galactosidase gene; required for blue/white selection on XGal plates.
lacY	Lactose permease activity eliminated.
lon	Elimination of a protease activities responsible for degrading aberrant proteins.
mcrA	Mutation eliminating restriction of DNA methylated at the sequence C^{M}CGG.
mtl	The ability to metabolize the sugar alcohol mannitol is eliminated.
ompT	Activity of outer membrane protease VII is eliminated, reducing proteolysis of expressed protein.
phoA	Activity of alkaline phosphatase is eliminated.
recA	Reduce unwanted homologous recombination.
relA	Permits RNA synthesis in the absence of protein synthesis.
rfbD	Unable to synthesis cell surface O-antigen as lack of functional TDP-rhamnose synthetase.
rpsL	Mutation in ribosomal protein S12 conveying streptomycin resistance.
supE	A tRNA functioning in suppressing the amber (UAG) stop codon by insertion of glutamine; required for growth of some phage vectors.
thi-1	The ability to synthesize thiamine (vit. B1) is eliminated.
Tn10	Transposon normally carrying Tetracycline resistance.
tsx	Resistance to bacteriophage T6 and colicin K.
(Φ80)	Strain carries the lambdoid prophage Φ80. A defective Φ80 prophage carrying the lac M15 deletion is present in some strains.

Nucleic Acids & Amino Acids Information

Concentration of Nucleic Acids

- **dsDNA (double-stranded DNA) :** 1 OD260 Unit = 50 µg/ml
- **ssDNA (single-stranded DNA) :** 1 OD260 Unit = 37 µg/ml
- **ssRNA (single-stranded RNA) :** 1 OD260 Unit = 40 µg/ml
- **dsDNA (double-stranded DNA) :** 1 OD260 Unit = 50 µg/ml
- **single-stranded oligonucleotides :** 1 OD260 Unit = 20 µg/ml

Molecular Weight Conversion of Nucleic Acids

- **Exact M.W. of ssRNA :**
  M.W. = $(A_x \times 329.2) + (U_x \times 306.2) + (C_x \times 305.2) + (G_x \times 345.2) + 159^*$
  X : the number of each respective nucleotide within the polynucleotide.
  * : M.W. of a 5' triphosphate.

- **Exact M.W. of ssDNA :**
  M.W. = $(A_x \times 313.2) + (T_x \times 304.2) + (C_x \times 289.2) + (G_x \times 329.2) + 79.0^*$
  X : the number of each respective nucleotide within the polynucleotide.
  * : M.W. of the 5' monophosphate left by most restriction enzymes. No phosphate is present at the 5' end of strands made by primer extension.

Molecular Weight of Amino Acids

Amino Acid	3-letter Code	1-letter Code	Molecular Weight (g/mol)
Alanine	Ala	A	89.1
Arginine	Arg	R	174.2
Asparagine	Asn	N	132.1
Aspartate	Asp	D	133.1
Cysteine	Cys	C	121.2
Glutamate	Glu	E	147.1
Glutamine	Gln	Q	146.2
Glycine	Gly	G	75.1
Histidine	His	H	155.2
Isoleucine	Ile	I	131.2

Amino Acid	3-letter Code	1-letter Code	Molecular Weight (g/mol)
Leucine	Leu	L	131.2
Lysine	Lys	K	146.2
Methionine	Met	M	149.2
Phenylalanine	Phe	F	165.2
Proline	Pro	P	115.1
Serine	Ser	S	105.1
Threonine	Thr	T	119.1
Tryptophan	Trp	W	204.2
Tyrosine	Tyr	Y	181.2
Valine	Val	V	117.1

Gel Information

Agarose Gel

%Agarose	Effective Range of Separation (bp)
0.5	1,000 to 30,000
0.7	800 to 12,000
1.0	500 to 10,000
1.2	400 to 7,000
1.5	200 to 3,000
3-4	10 to 1000

Polyacrylamide Gel (Denaturing Gel)

%Acrylamide	Effective Range of Separation (nucleotides)
3.5	> 500
5	151-500
10	61-150
15	30-60
20	< 30

Note

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UniversAll & EtB"Out" & DNA/RNA Extraction Kit & PCR & YLEX

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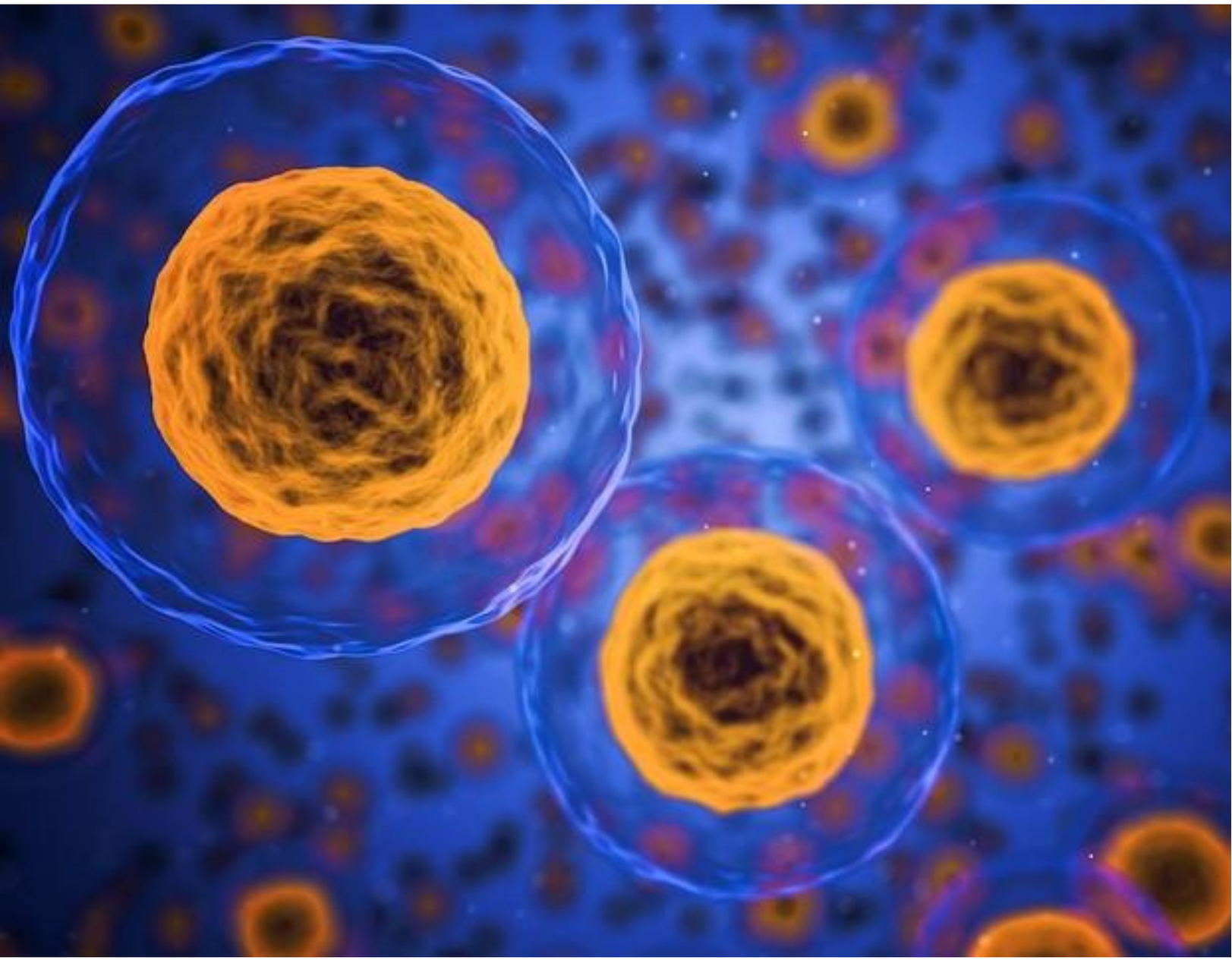

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