

Life Science Research 2023



nzytech



## Your Partner for Life Sciences

NZYTEch designs, manufactures and supplies key reagents, kits and master mixes for life science research and molecular diagnostics. Powered by in-house Research and Development, NZYTEch engineers products to aid researchers and clinicians around the world - Serving more than 70 Countries, across 5 Continents.

From qPCR Master Mixes and cDNA Synthesis Kits to One-Step RT-qPCR Master Mixes, Key Components for qPCR assays, Bst DNA Polymerases and RNA/DNA Isolation Kits.

NZYTEch is a global supplier-of-choice providing IVD kits for SARS-CoV-2 and Respiratory Viruses detection as well as more than 100 qPCR detection kits for Veterinary, Agro Pathogen, Food/Water and Human Pathogen industries searching for molecular research and diagnostic qPCR kits.

NZYTEch has global database and supply of Glycobiology products. With more than 80 enzyme categories available, listing more than 1000 CAZymes to choose from. As well as analytical test kits for agro-food and fermentation industries.

Committed to the ever growing field of scientific research, our scientists are deeply engaged in the development of novel products every year. Dedicated to advancing science and being your trusted partner in Life Sciences.





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#### NZYWallet

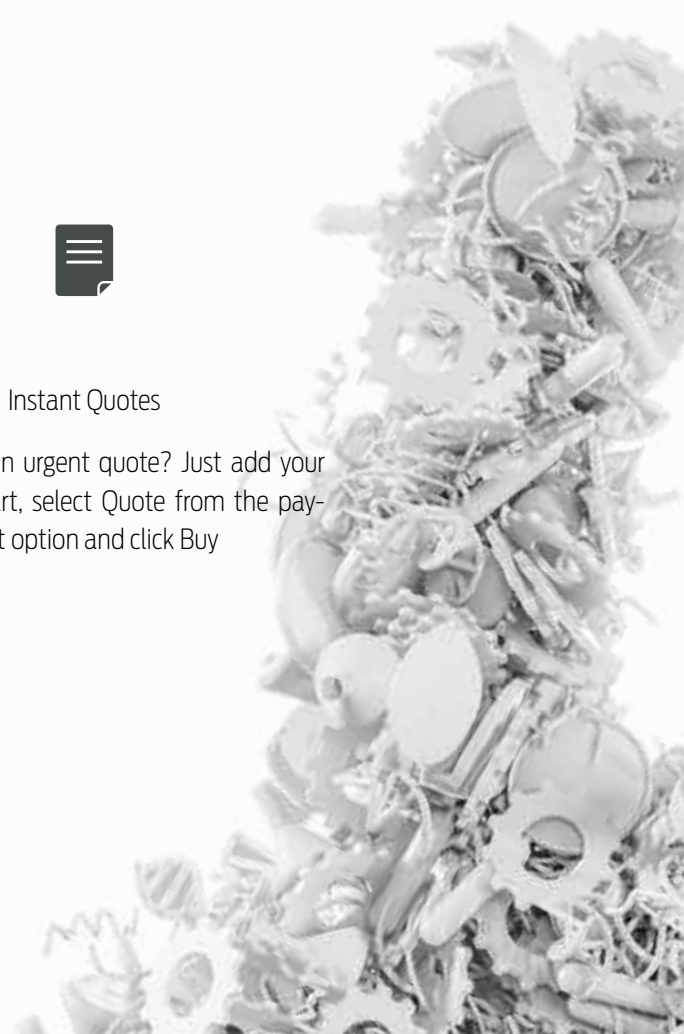
NZYWallet is a prepaid account that gives the flexibility you need to focus on your research. With NZYWallet you can buy any product from our online store, check your up-to-date balance and track your latest orders.



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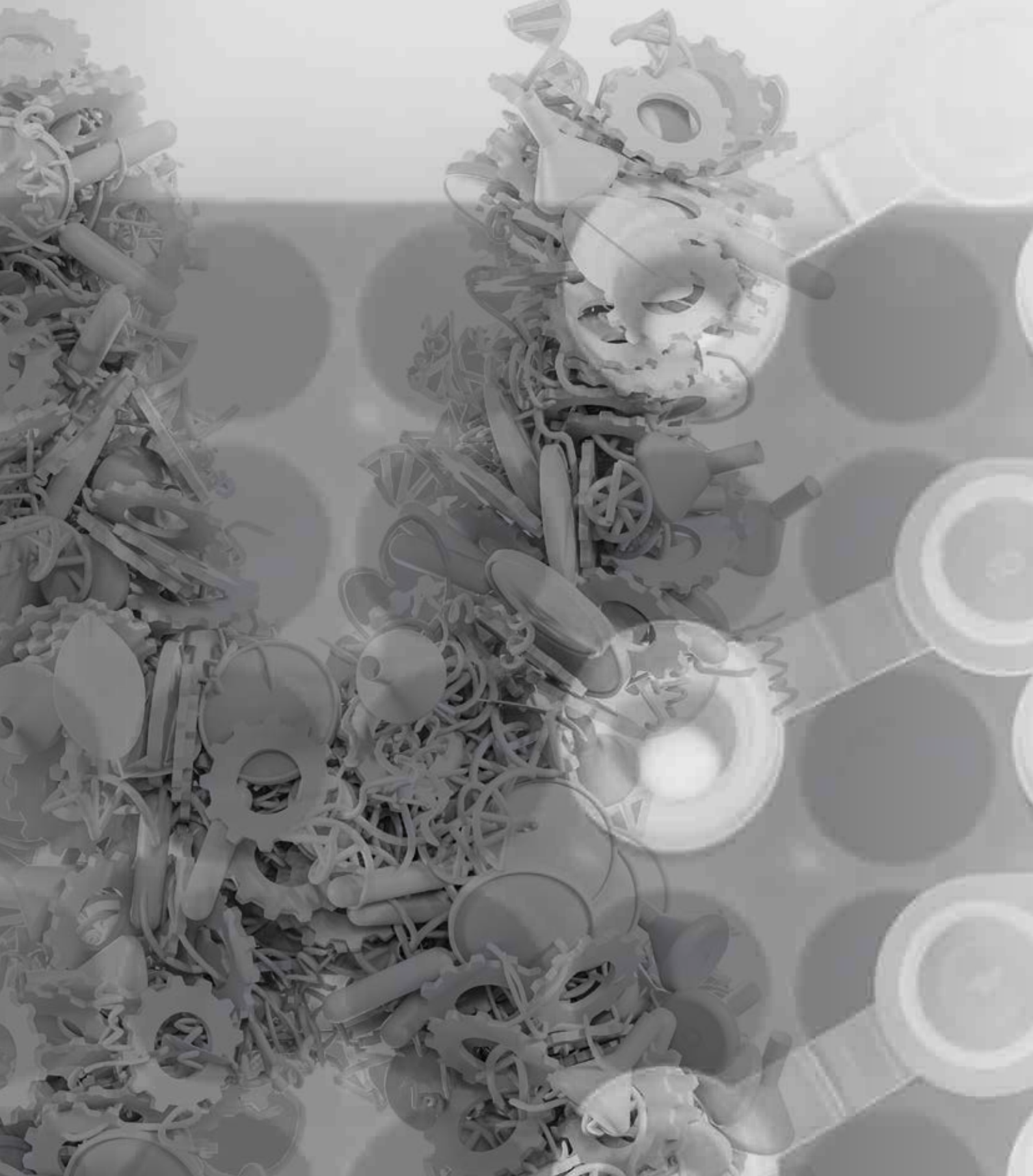
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## DNA & RNA purification

PLASMID DNA PURIFICATION

GENOMIC DNA PURIFICATION

RNA PURIFICATION

NUCLEIC ACIDS CLEAN-UP

DNA & RNA PURIFICATION ENZYMES

# DNA & RNA PURIFICATION

## PLASMID DNA PURIFICATION

NZYTEch provides kits for the rapid preparation of highly pure plasmid DNA from recombinant *Escherichia coli* strains at different scales (NZYMiniprep, NZYMidiprep and NZYMaxiprep). The resulting purified plasmid DNA is suitable for use in the most demanding molecular biology applications. Buffers for plasmid purification kits, columns and RNase A are also sold separately for your convenience. Our portfolio also includes kits designed for manual or automated large-scale purification of DNA plasmids from *E. coli* in 96-well format (NZYMiniprep 96-well plate), or for the fast purification of multiples DNA molecules simultaneously (NZYDNA Clean-up 96-well plate).

Plasmid DNA kits	Plasmid type	Typical yield	Scale/ Format
NZYMiniprep	high and low-copy number, BACs or cosmids	up to 45 µg	Mini/spin-column
NZYMiniprep 96-well plate	high and low-copy number	up to 15 µg	Mini/96-well plate
NZYSpeedy Miniprep	high and low-copy number, BACs or cosmids	up to 35 µg	Mini/spin-column
NZYMidiprep	high and low-copy number, BACs or cosmids	up to 150 µg	Midi/gravity flow column
NZYMaxiprep	high and low-copy number, BACs or cosmids	up to 1000 µg	Maxi/gravity flow column
NZYMaxiprep Endotoxin Free	high and low-copy number, BACs or cosmids	up to 500 µg	Maxi/gravity flow column

## Miniprep

### NZYMiniprep

MB01001	50 columns
MB01009	2 x 50 columns
MB01002	200 columns
MB01008	5 x 200 columns

### NZYMiniprep 96-well plate

MB20201	2 plates
MB20202	4 x 2 plates

### NZYSpeedy Miniprep

MB21001	50 columns
MB21004	2 x 50 columns
MB21002	200 columns
MB21003	5 x 200 columns

### NZYTEch Spin Columns & Collection Tubes

MB18901	50 units
MB18902	4 x 50 units

### Buffer A1

MB20301	60 mL
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### Buffer A2

MB20401	60 mL
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### Buffer A3

MB20501	80 mL
---------	-------

### Buffer AY

MB20601	120 mL
---------	--------

### Buffer A4

MB20701	25 mL
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Procedure	Time	Quality grade	Application
Manual – centrifugation	< 25 min	Molecular Biology	Cloning, sequencing, PCR, enzymatic reactions, transfection
Manual or Automated – under vacuum or centrifugation	~ 45 min	Molecular Biology	Cloning, sequencing, PCR, enzymatic reactions, transfection
Manual – centrifugation	≤ 12 min	Molecular Biology	Cloning, sequencing, PCR, enzymatic reactions, transfection
Manual – centrifugation	~ 70 min	Transfection	Transfection, cloning, sequencing, PCR, enzymatic reactions
Manual – centrifugation	~ 70 min	Transfection	Transfection, cloning, sequencing, PCR, enzymatic reactions
Manual – centrifugation	~ 80 min	Endotoxin free	Transfection, cloning, sequencing, PCR, enzymatic reactions

## Midiprep

### NZYMidiprep

MB05003	5 columns
MB05004	20 columns
MB05005	3 x 20 columns

### NZYMidiprep, no columns

MB14101	20 preps
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### NZYTech Plasmid Midi Columns

MB19001	5 units
MB19002	4 x 5 units

## Maxiprep

### NZYMaxiprep

MB05101	5 columns
MB05102	2 x 5 columns
MB05103	5 x 5 columns

### NZYMaxiprep, no columns

MB14201	5 preps
---------	---------

### NZYTech Plasmid Maxi Columns

MB20101	5 units
MB20102	4 x 5 units

### NZYMaxiprep Endotoxin Free

MB39901	5 columns
MB39902	2 x 5 columns

## GENOMIC DNA PURIFICATION

NZY gDNA Isolation kits are spin column silica-based systems designed for the simple and rapid small-scale purification of genomic DNA from various sources. Resulting purified DNA has the highest quality and integrity and is suitable for use in most sensitive downstream applications.

Genomic DNA kits	Sample Material	Typical yield	Scale/Format	Time	Application
NZY Tissue gDNA Isolation kit	Animal tissue, cultured cells, bacterial cells, rodent tails, buccal swabs, paraffin embedded tissue and fecal material, whole blood*, serum, plasma, body fluids	up to 35 µg	Small-scale/Spin-column	20 min <sup>2</sup>	PCR, qPCR, genotyping, sequencing, enzymatic manipulations
NZY Plant/Fungi gDNA Isolation kit	Plant and fungal tissues	up to 30 µg	Small-scale/Spin-column	30 min	PCR, qPCR, genotyping, sequencing, enzymatic manipulations
NZY Soil gDNA Isolation kit	Soil, sludge, sediment and stool samples	2-10 µg	Small-scale/Spin-column	~ 15 min <sup>2</sup>	PCR, qPCR, genotyping, sequencing, enzymatic manipulations
NZY Microbial gDNA Isolation kit	Cell pellets of gram-positive and gram-negative bacteria	5-25 µg <sup>1</sup>	Small-scale/Spin-column	~ 15 min	PCR, qPCR, genotyping, sequencing, enzymatic manipulations

\* Fresh, frozen or treated; <sup>1</sup> From 30 mg wet weight cell pellet; <sup>2</sup> Excluding lysis step.

### NZY Tissue gDNA Isolation kit

MB13502	50 columns
MB13503	200 columns

### NZY Plant/Fungi gDNA Isolation kit

MB17701	50 columns
MB17702	4 x 50 columns

### NZY Soil gDNA Isolation kit

MB21802	50 columns
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### NZY Microbial gDNA Isolation kit

MB21702	50 columns
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Different sample sources (animal tissues, cultured cells, bacterial cells, mouse tails, yeast, stool, forensic and clinical samples) can be used for gDNA isolation with NZY Tissue gDNA Isolation kit

All protocols are optimized for different biological matrices to provide high quantity of pure genomic DNA

NZYTech recently discontinued NZY Blood gDNA Isolation kit (Cat. No. MB136) since the NZY Tissue gDNA Isolation kit serves for the same use



## RNA PURIFICATION

NZYTech's RNA Isolation kits are spin column silica-based systems designed for the easy and fast purification of RNA at the highest integrity from a variety of sources, such as animal tissues, cultured cells and bacteria (NZY Total RNA Isolation kit), serum, plasma, saliva, nasal samples, blood and environmental samples (NZY Viral RNA Isolation kit). Recently, NZYTech developed the NZY Mag Viral RNA/DNA Isolation kit, IVD (MD04881/2), which is a magnetic bead technology-based nucleic acid purification kit designed to recover RNA and DNA from viral particles contained in transport medium from human respiratory swabs.

### NZY Total RNA Isolation kit

MB13402 50 columns

### NZY Viral RNA Isolation kit

MB40701 50 columns

### RNase Cleaner

MB16001 500 mL

### NZYol

MB18501 100 mL

### Buffer NVL

MB40801 100 mL

### NZY Mag Viral RNA/DNA Isolation Kit, IVD

MD04881 200 preps

MD04882 2000 preps

## NUCLEIC ACIDS CLEAN-UP

NZYGelpure kit is designed for the purification of DNA (50 bp to 20 kb) from TAE/TBE agarose gels and for direct purification of enzymatic reactions. NZYGelpure purification kit utilizes a silica-gel based membrane which selectively adsorbs up to 20 µg of DNA fragments in the presence of specialized binding buffers. NZYDNA Clean-up in 96 well format is available for high-throughput protocols.

### DNA Clean-Up

#### NZYGelpure

MB01101 50 columns  
MB01104 2 x 50 columns  
MB01102 200 columns  
MB01103 5 x 200 columns

#### NZYDNA Clean-up 96-well plate

MB20001 2 plates  
MB20002 4 x 2 plates

NZYGelpure: includes a pH indicator, allowing to analyze the optimal pH for DNA binding



## DNA & RNA PURIFICATION ENZYMES

### NZY DNase I

MB19901 200 U/vial

### NZY RNase A

MB18701 100 mg

### Proteinase K

MB01901 100 mg  
MB01902 500 mg







## end-point pcr

DNA POLYMERASES & OTHER PCR ENZYMES

MASTER MIXES

MULTIPLEX MIXES

COMPONENTS/SUPPLEMENTS

# END-POINT PCR

## DNA POLYMERASES & OTHER PCR ENZYMES

NZYTEch's DNA polymerases offer great performance expressed by high yields and extreme sensitivity. Each enzyme presents different features to cover a wide range of applications. Thus, we organized enzymes by applications allowing you to direct your selection to the enzymes that most suit your experiment. The Supreme version of each enzyme displays a hot-start-like activity for improved specificity and sensitivity.

	DNA polymerase	Features	Product length	Extension (sec/kb)	Proof reading	Sensitivity*	Product overhang	Cat. No.
Power & Routine	<b>NZYTaq II</b>	High yields with minimal optimization	≤ 6 kb	15-30	No	5 pg	3'-A	MB354
	<b>Supreme NZYTaq II</b>	Hot-start-like version of NZYTaq II	≤ 6 kb	15-30	No	1 pg	3'-A	MB355
	<b>Speedy NZYTaq</b>	Powerful PCR in 30-60 min	≤ 6 kb	5-10 <sup>#</sup>	No	50 pg	3'-A	MB403
	<b>Speedy Supreme NZYTaq</b>	Hot-start-like PCR in 15-60 min	≤ 6 kb	5-10 <sup>#</sup>	No	1 pg	3'-A	MB390
Fidelity	<b>NZYProof</b>	High fidelity proofreading enzyme	≤ 10 kb	60	Yes	5 ng	Blunt	MB146
	<b>Supreme NZYProof</b>	Hot-start-like version of NZYProof	≤ 10 kb	15-30	Yes	1 ng	Blunt	MB283
	<b>Speedy NZYProof</b>	High fidelity PCR in 30-60 min	≤ 2 kb	5	Yes	10 ng	Blunt	MB404
	<b>Speedy Supreme NZYProof</b>	Fast & powerful fidelity PCR	≤ 2 kb	2	Yes	1 ng	Blunt	MB436
Long	<b>NZYLong</b>	Increased processivity for extended PCR	≤ 20 kb	60	No	5 ng	Mixed	MB003
	<b>Supreme NZYLong</b>	Hot-start-like version of NZYLong	≤ 25 kb	60	No	1 ng	Mixed	MB331

\*Measures the minimal quantity of human gDNA required to amplify a 1 kb template

<sup>#</sup> For DNA fragments lower than 2kb, use 5 sec/kb

## Powerful PCR

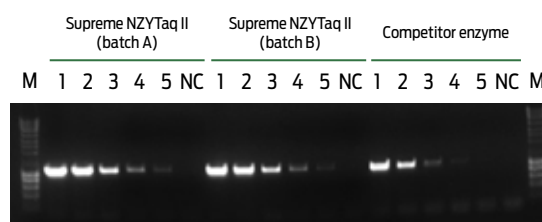
NZYTaq II DNA polymerase	
MB35401	500 U
MB35402	1000 U
MB35403	2500 U

NZYTaq II with 5x Gel Load Reaction Buffer	
MB36401	500 U
MB36402	1000 U
MB36403	2500 U

Supreme NZYTaq II DNA polymerase	
MB35501	500 U
MB35502	1000 U
MB35503	2500 U

Supreme NZYTaq II with 5x Gel Load Buffer	
MB36501	500 U
MB36502	1000 U
MB36503	2500 U

Supreme NZYTaq II DNA polymerase: High sensitivity, reproducibility and performance



Amplification of a 1-kb fragment from human genomic DNA using a 1:5 dilution series ranging from 20 ng to 32 pg. 1) 20 ng; 2) 4 ng; 3) 0.8ng; 4) 0.16 ng; 5) 0.032 ng; NC) No template control; M) NZYDNA Ladder III

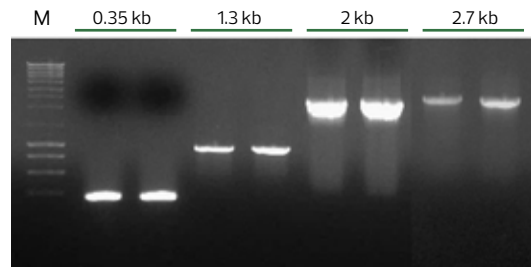
### Speedy NZYTaQ DNA polymerase

MB40301	125 U
MB40302	500 U

### Speedy Supreme NZYTaQ DNA polymerase

MB39001	500 U
MB39002	1000 U
MB39003	2500 U

Speedy NZYTaQ DNA polymerase: Successful amplification of different-sized targets with limited extension time (5 sec/kb)



## High Fidelity PCR

### NZYProof DNA polymerase

MB14601	125 U
MB14602	500 U
MB14603	1000 U

### Supreme NZYProof DNA polymerase

MB28301	125 U
MB28302	500 U
MB28303	1000 U

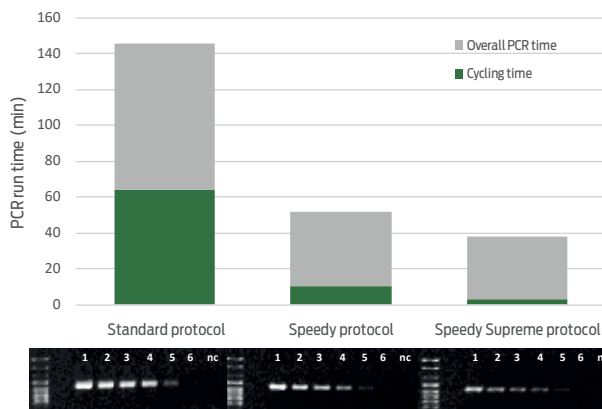
### Speedy NZYProof DNA polymerase

MB40401	125 U
MB40402	500 U

### Speedy Supreme NZYProof DNA polymerase

MB43601	125 U
MB43602	500 U

Speedy Supreme NZYProof DNA polymerase: The best choice for ultra-rapid fidelity PCRs



Amplification of a 1-kb fragment from human genomic DNA using dilution series ranging from 80 ng to 0.625 ng. The PCR was conducted with **Speedy Supreme NZYProof DNA polymerase** (2.5 U) in a 50  $\mu$ L final volume in different cycling protocols (standard, speedy and speedy supreme).

The cycling times for each protocol are shown in blue, while the overall PCR times on a Thermal Cycler System with a ramp rate of 4°C/sec are shown in grey. PCR products analysis through agarose gel electrophoresis (1% v/v TAE) is presented below to the chart, using NZYDNA Ladder VIII (Cat. No. MB175); numbers represent the amount of DNA template used.

1) 80 ng; 2) 40 ng; 3) 20ng; 4) 10 ng; 5) 2.5 ng; 6) 0.625 ng; NC) No template control

## Long PCR

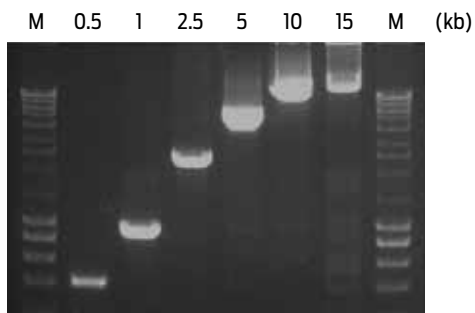
### NZYLong DNA polymerase

MB00301	125 U
MB00302	500 U
MB00303	1000 U

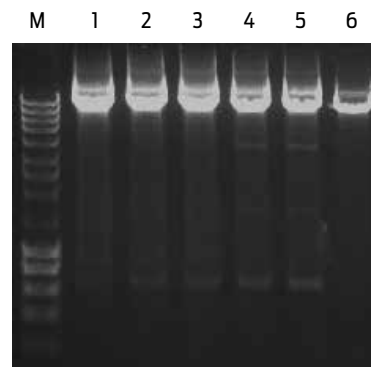
### Supreme NZYLong DNA polymerase

MB33101	125 U
MB33102	500 U
MB33103	1000 U

NZYLong DNA polymerase:  
Successful amplification of DNA fragments from 0.5 to 15 kb



Supreme NZYLong DNA polymerase:  
High sensitivity with large-sized fragments using different amounts of *E. coli* gDNA



1) 40 ng; 2) 20 ng; 3) 10 ng; 4) 5 ng; 5) 2.5 ng; 6) 1.25 ng; M) NZYDNA Ladder III

## Other PCR Enzymes



### NZY Uracil-DNA Glycosylase

MB44601	100 µL
MB44602	3 x 100 µL



### NZY Thermolabile Uracil-DNA Glycosylase

MB44501	100 µL
MB44502	3 x 100 µL

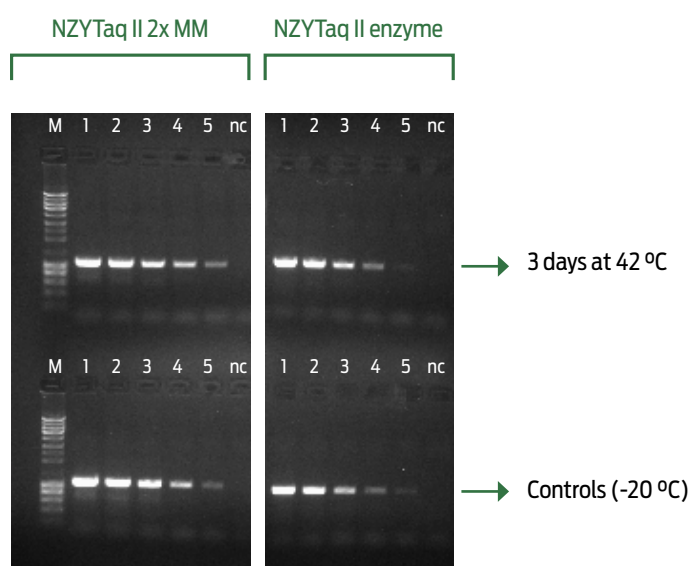


## MASTER MIXES

NZYTech presents a variety of master mixes containing all PCR components (except primers and template) at optimal concentrations for efficient DNA amplification. Green Master Mixes allow amplification reactions to be directly loaded onto agarose gels. The mixes are formulated in 2x concentrated solutions.

DNA polymerase	Master Mix	Loading dye	Cat. No.
NZYTaq II DNA polymerase	NZYTaq II 2x Green Master Mix	Yes	MB358
	NZYTaq II 2x Colourless Master Mix	No	MB357
Supreme NZYTaq II DNA polymerase	Supreme NZYTaq II 2x Green Master Mix	Yes	MB360
	Supreme NZYTaq II 2x Colourless Master Mix	No	MB359
Speedy NZYTaq DNA polymerase	Speedy NZYTaq 2x Green Master Mix	Yes	MB362
	Speedy NZYTaq 2x Colourless Master Mix	No	MB361
Speedy Supreme NZYTaq DNA polymerase	Speedy Supreme NZYTaq 2x Green Master Mix	Yes	MB391
	Speedy Supreme NZYTaq 2x Colourless Master Mix	No	MB392
NZYProof DNA polymerase	NZYProof 2x Green Master Mix	Yes	MB287
	NZYProof 2x Colourless Master Mix	No	MB288
Supreme NZYProof DNA polymerase	Supreme NZYProof 2x Green Master Mix	Yes	MB285
	Supreme NZYProof 2x Colourless Master Mix	No	MB286
NZYLong DNA polymerase	NZYLong 2x Green Master Mix	Yes	MB139
	NZYLong 2x Colourless Master Mix	No	MB332
Supreme NZYLong DNA polymerase	Supreme NZYLong 2x Green Master Mix	Yes	MB333
	Supreme NZYLong 2x Colourless Master Mix	No	MB334

NZYTaq II DNA polymerase: Robust stability at high temperatures



**Activity of NZYTaq II DNA polymerase (individual enzyme and master mix formats) after 3 days at high temperature storage.** NZYTaq II DNA polymerase and NZYTaq II 2x Green Master Mix were stored during 3 days at 42 °C. Controls of the same batches were kept at -20 °C. Then, the activity was assayed in a PCR experiment to amplify a 1-kb fragment using as template a dilution series of human genomic DNA (from 20 ng to 32 pg); numbers represent the amount of DNA template used (1: 20 ng; 2: 4 ng; 3: 0.8ng; 4: 0.16 ng; 5: 0.032 ng; nc: negative control without DNA). M: NZYDNA Ladder III (Cat. No. MBO44)

## NZYTaq II-based master mixes

### NZYTaq II 2x Green Master Mix

MB35801	500 U (100 x 50 µL rxs)
MB35802	1000 U (200 x 50 µL rxs)
MB35803	5000 U (1000 x 50 µL rxs)

### NZYTaq II 2x Colourless Master Mix

MB35701	500 U (100 x 50 µL rxs)
MB35702	1000 U (200 x 50 µL rxs)
MB35703	5000 U (1000 x 50 µL rxs)

## Supreme NZYTaq II-based master mixes

### Supreme NZYTaq II 2x Green Master Mix

MB36001	500 U (100 x 50 µL rxs)
MB36002	1000 U (200 x 50 µL rxs)
MB36003	5000 U (1000 x 50 µL rxs)

### Supreme NZYTaq II 2x Colourless Master Mix

MB35901	500 U (100 x 50 µL rxs)
MB35902	1000 U (200 x 50 µL rxs)
MB35903	5000 U (1000 x 50 µL rxs)

## Speedy Supreme NZYTaq-based master mixes

### Speedy Supreme NZYTaq 2x Green MM

MB39101	500 U (100 x 50 µL rxs)
MB39102	1000 U (200 x 50 µL rxs)
MB39103	5000 U (1000 x 50 µL rxs)

### Speedy Supreme NZYTaq 2x Colourless MM

MB39201	500 U (100 x 50 µL rxs)
MB39202	1000 U (200 x 50 µL rxs)
MB39203	5000 U (1000 x 50 µL rxs)

## Speedy NZYTaq-based Master Mixes

### Speedy NZYTaq 2x Green Master Mix

MB36201	500 U (100 x 50 µL rxs)
MB36202	1000 U (200 x 50 µL rxs)
MB36203	5000 U (1000 x 50 µL rxs)

### Speedy NZYTaq 2x Colourless Master Mix

MB36101	500 U (100 x 50 µL rxs)
MB36102	1000 U (200 x 50 µL rxs)
MB36103	5000 U (1000 x 50 µL rxs)

## NZYProof-based master mixes

### NZYProof 2x Green Master Mix

MB28701	500 U (100 x 50 µL rxs)
MB28702	1000 U (200 x 50 µL rxs)
MB28703	5000 U (1000 x 50 µL rxs)

### NZYProof 2x Colourless Master Mix

MB28801	500 U (100 x 50 µL rxs)
MB28802	1000 U (200 x 50 µL rxs)
MB28803	5000 U (1000 x 50 µL rxs)

## Supreme NZYProof-based master mixes

### Supreme NZYProof 2x Green Master Mix

MB28501	500 U (100 x 50 µL rxs)
MB28502	1000 U (200 x 50 µL rxs)
MB28503	5000 U (1000 x 50 µL rxs)

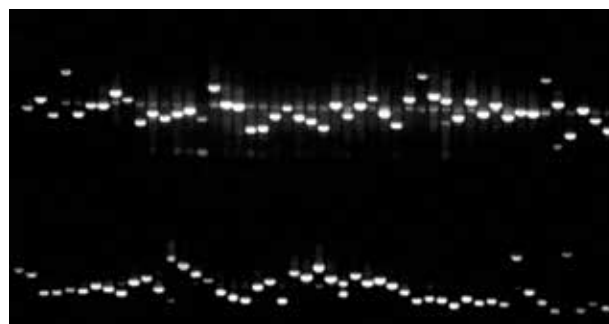
### Supreme NZYProof 2x Colourless Master Mix

MB28601	500 U (100 x 50 µL rxs)
MB28602	1000 U (200 x 50 µL rxs)
MB28603	5000 U (1000 x 50 µL rxs)

#### NZYLong 2x Green Master Mix:

Convenience of direct gel loading of different-sized PCR products in a high-throughput PCR experiment (96 amplifications)

Green Master Mixes offer convenience in colony PCR and high-throughput applications



## NZYLong-based master mixes

### NZYLong 2x Green Master Mix

MB13902	500 U (100 x 50 µL rxs)
MB13903	1000 U (200 x 50 µL rxs)
MB13904	5000 U (1000 x 50 µL rxs)

### NZYLong 2x Colourless Master Mix

MB33201	500 U (100 x 50 µL rxs)
MB33202	1000 U (200 x 50 µL rxs)
MB33203	5000 U (1000 x 50 µL rxs)

## Supreme NZYLong-based master mixes

### Supreme NZYLong 2x Green Master Mix

MB33301	500 U (100 x 50 µL rxs)
MB33302	1000 U (200 x 50 µL rxs)
MB33303	5000 U (1000 x 50 µL rxs)

### Supreme NZYLong 2x Colourless Master Mix

MB33401	500 U (100 x 50 µL rxs)
MB33402	1000 U (200 x 50 µL rxs)
MB33403	5000 U (1000 x 50 µL rxs)

## MULTIPLEX MIXES

NZYTech developed two PCR master mixes based on our non-proofreading and proofreading enzymes for the simultaneous amplification of multiple DNA fragments (up to 15 targets) in a single tube. The mixes are provided in 2x concentrated solutions, in green (direct-gel load) and colourless versions.

### Multiplex PCR NZYTaq 2x Green Master Mix

MB33501	500 U (100 x 50 µL rxs)
MB33502	1000 U (200 x 50 µL rxs)
MB33503	5000 U (1000 x 50 µL rxs)

### Multiplex PCR NZYTaq 2x Colourless MM

MB33601	500 U (100 x 50 µL rxs)
MB33602	1000 U (200 x 50 µL rxs)
MB33603	5000 U (1000 x 50 µL rxs)

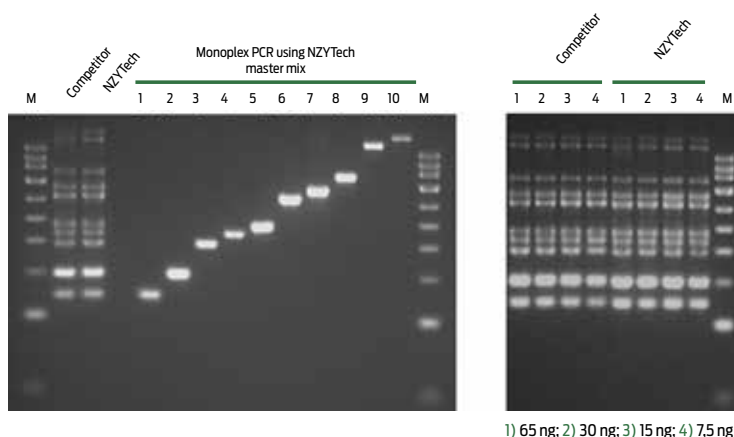
### Multiplex PCR NZYProof 2x Green Master Mix

MB33701	500 U (100 x 50 µL rxs)
MB33702	1000 U (200 x 50 µL rxs)

### Multiplex PCR NZYProof 2x Colourless MM

MB33801	500 U (100 x 50 µL rxs)
MB33802	1000 U (200 x 50 µL rxs)

Multiplex PCR NZYTaq 2x Green Master Mix:  
High performance in a multiplex PCR reaction amplifying 10 different fragments from human genomic DNA



## COMPONENTS/SUPPLEMENTS

### dNTPs

#### dNTPs NZYSet

MB08701	100 mM (4 x 0.25 mL)
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#### dNTPs NZYMix

MB08601	25 mM each, 1 mL
MB08602	25 mM each, 5 mL
MB08603	10 mM each, 0.2 mL
MB08604	10 mM each, 1 mL
MB08605	10 mM each, 5 mL

### PCR Supplements

NZYTech supplements are available to optimize PCR conditions with NZYTaq II DNA polymerase.

#### NZYTaq 5x Optimizer Solution

MB06001	1 mL
MB06002	3 x 1 mL

#### NZYTaq 2x GC-Enhancer Solution

MB14301	1 mL
MB14302	5 x 1 mL





## **real-time pcr**

**qPCR MASTER MIXES**

**ONE-STEP RT-qPCR KITS**

**ONE-STEP RT-qPCR MASTER MIXES**

**qPCR COMPONENTS**

# REAL-TIME PCR

## qPCR MASTER MIXES

NZYTEch has developed and optimized two of the most widely used real-time fluorescent PCR chemistries: the probe-detection technology (Probe Mixes) and the intercalating green dye chemistry (Green Mixes). NZYSupreme mixes are ultra-sensitive mixes developed with a dual hot-start mode and suitable for standard thermal cycling protocols. NZYSpeedy mixes present a higher performance for the faster real-time PCR protocols. Passive reference dye based on ROX™ dye is used to normalize the fluorescent reporter signal in real-time PCR. NZYTEch provides highly optimized mixes that are compatible with different thermocyclers available on the market. NZYTEch recently increased its portfolio of real-time qPCR products by introducing lyophilized master mixes, which are very stable formulations that allow an eco-friendly and cost-effective room temperature shipment.

Choose the mix with the reference dye that is most appropriate for your instrument with the help of the qPCR Selection Guide below.

	ROX plus	ROX	(no ROX*)
<b>Agilent</b>			
AriaMX		✓	
MX3000P™, MX3005P™, MX4000P™		✓	
<b>Applied Biosystems™</b>			
7000/7300/7700	✓		
7500/7500 FAST		✓	
7900/7900HT/7900HT FAST	✓		
QuantStudio™ 5, 6, 7, 12k Flex/ViiA7™		✓	
StepOne™/StepOne™plus	✓		
<b>Bio-Rad®</b>			
CFX Opus/CFX96™/CFX384™			✓
Opticon™/Opticon™ 2			✓
<b>Fluidigm®</b>			
BioMark™		✓	
<b>Illumina®</b>			
Eco™			✓
<b>Qiagen</b>			
Rotor-Gene™ 3000			✓
Rotor-Gene™ 6000			✓
Rotor-Gene™ Q			✓
<b>Roche</b>			
Lightcycler® 96			✓
Lightcycler® 480			✓
Lightcycler® Nano			✓

\* For qPCR instruments that require ROX reference dye, it is possible to add ROX in a separate step, according to instructions provided in the respective Master Mix product brochure.

## Green Master Mixes

### NZYSupreme qPCR Green MM (2x), ROX plus

MB44001	2 mL (200 x 20 µL rxs)
MB44002	5 mL (500 x 20 µL rxs)
MB44003	20 mL (2000 x 20 µL rxs)

### NZYSupreme qPCR Green MM (2x), ROX

MB44101	2 mL (200 x 20 µL rxs)
MB44102	5 mL (500 x 20 µL rxs)
MB44103	20 mL (2000 x 20 µL rxs)

### NZYSupreme qPCR Green Master Mix (2x)

MB41901	2 mL (200 x 20 µL rxs)
MB41902	5 mL (500 x 20 µL rxs)
MB41903	20 mL (2000 x 20 µL rxs)

Hot-start like activity  
Reproducibility  
Highly sensitive



### Also Available:

#### NZYSpeedy qPCR Green Master Mix (2x), ROX plus

MB22201	2 mL (200 x 20 µL rxs)
MB22202	5 mL (500 x 20 µL rxs)
MB22203	20 mL (2000 x 20 µL rxs)

#### NZYSpeedy qPCR Green Master Mix (2x), ROX

MB22301	2 mL (200 x 20 µL rxs)
MB22302	5 mL (500 x 20 µL rxs)
MB22303	20 mL (2000 x 20 µL rxs)

#### NZYSpeedy qPCR Green Master Mix (2x)

MB22401	2 mL (200 x 20 µL rxs)
MB22402	5 mL (500 x 20 µL rxs)
MB22403	20 mL (2000 x 20 µL rxs)

## Probe Master Mixes

### NZYSupreme qPCR Probe MM (2x), ROX plus

MB43901	2 mL (200 x 20 µL rxns)
MB43902	5 mL (500 x 20 µL rxns)
MB43903	20 mL (2000 x 20 µL rxns)

### NZYSupreme qPCR Probe MM (2x), ROX

MB43801	2 mL (200 x 20 µL rxns)
MB43802	5 mL (500 x 20 µL rxns)
MB43803	20 mL (2000 x 20 µL rxns)

### NZYSupreme qPCR Probe Master Mix (2x)

MB41601	2 mL (200 x 20 µL rxns)
MB41602	5 mL (500 x 20 µL rxns)
MB41603	20 mL (2000 x 20 µL rxns)

### Lyo NZYSupreme qPCR Probe Master Mix (2x)

MB41702	For 1.5 mL (150 x 20 µL rxns)
---------	-------------------------------

### NZYSupreme Multiplex qPCR Probe MM (2x)

MB45201	2 mL (200 x 20 µL rxns)
MB45202	5 mL (500 x 20 µL rxns)
MB45202	20 mL (2000 x 20 µL rxns)

### Lyo NZYSupreme Multiplex qPCR Probe MM (2x)

MB45301	For 1.5 mL (150 x 20 µL rxns)
---------	-------------------------------

High efficiency  
High specificity  
Efficient multiplexing



### Also Available:

#### NZYSpeedy qPCR Probe Master Mix (2x), ROX plus

MB22801	2 mL (200 x 20 µL rxns)
MB22802	5 mL (500 x 20 µL rxns)
MB22803	20 mL (2000 x 20 µL rxns)

#### NZYSpeedy qPCR Probe Master Mix (2x), ROX

MB22901	2 mL (200 x 20 µL rxns)
MB22902	5 mL (500 x 20 µL rxns)
MB22903	20 mL (2000 x 20 µL rxns)

#### NZYSpeedy qPCR Probe Master Mix (2x)

MB23001	2 mL (200 x 20 µL rxns)
MB23002	5 mL (500 x 20 µL rxns)
MB23003	20 mL (2000 x 20 µL rxns)



## ONE-STEP RT-qPCR KITS

NZYTEch provides One-step real-time PCR kits designed to directly amplify RNA samples on your real-time PCR instrument. These kits were developed to enable cDNA synthesis from input RNA followed by PCR amplification of the cDNA in the same reaction well, with no extra hands-on requirement or further reagent addition. This not only reduces the number of sample manipulations but also saves time. One-step kits are available for Probe and Green detection. Choose the One-step real-time PCR kit that most suits your experiment and that is most appropriate for your instrument through the analysis of the qPCR Selection Guide presented in page 22.

### One-Step RT-qPCR Green Kits

Fast

#### One-step RT-qPCR Green Kit (2x), ROX plus

MB34401	100 reactions
MB34402	500 reactions

#### One-step RT-qPCR Green Kit (2x)

MB34601	100 reactions
MB34602	500 reactions

#### One-step RT-qPCR Green Kit (2x), ROX

MB34501	100 reactions
MB34502	500 reactions

### One-Step RT-qPCR Probe Kits

Fast

#### One-step RT-qPCR Probe Kit (2x), ROX plus

MB35001	100 reactions
MB35002	500 reactions

#### One-step RT-qPCR Probe Kit (2x)

MB35201	100 reactions
MB35202	500 reactions

#### One-step RT-qPCR Probe Kit (2x), ROX

MB35101	100 reactions
MB35102	500 reactions

## ONE-STEP RT-qPCR MASTER MIXES

NZYTEch provides One-step real-time qPCR master mixes containing all required components (except primers/probe and template) to perform reverse transcription and qPCR amplification in a single-step. This offers great convenience and minimizes the risk of errors and contaminations. These master mixes were engineered with a dual hot-start enzyme control mechanism to provide the highest detection sensitivity. In addition, the latest developments in PCR enhancers were introduced. Lyophilized versions are also available as very stable room temperature options.

### One-Step RT-qPCR Probe Master Mixes

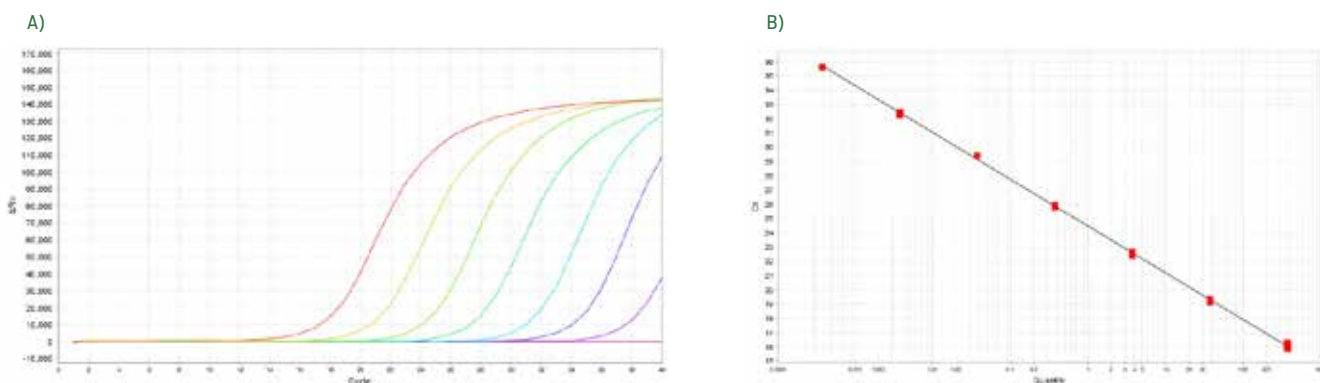
#### NZYSupreme RT-qPCR Probe MM (2x)

MB41401	2 mL (200 x 20 µL rxs)
MB41402	5 mL (500 x 20 µL rxs)
MB41403	20 mL (2000 x 20 µL rxs)

#### NEW NZYSupreme Multiplex RT-qPCR Probe MM (2x)

MB44201	2 mL (200 x 20 µL rxs)
MB44202	5 mL (500 x 20 µL rxs)
MB44203	20 mL (2000 x 20 µL rxs)

NZYSupreme One-step RT-qPCR Probe Master Mix: High-performance across a wide dynamic range of very low RNA inputs (<0.5 pg)



A 10-fold serial dilution of total RNA from mouse liver (375 ng to 0.375 pg) was used as template for a one-step real-time RT-qPCR experiment to detect the rpl27 housekeeping gene.

Panel A: evidence of the high performance and linearity when using NZYSupreme One-step RT-qPCR Probe Master Mix. Panel B: standard curve (slope: -3.28; efficiency: 101.7%).

Ultra-sensitive: Detect low-copy number targets (8 copies)

Dual Hot-Start mode for Supreme versions

Include RNase Inhibitor

Efficient multiplexing

Lyo formats stable at Room Temperature



## Lyo One-step RT-qPCR Master Mixes

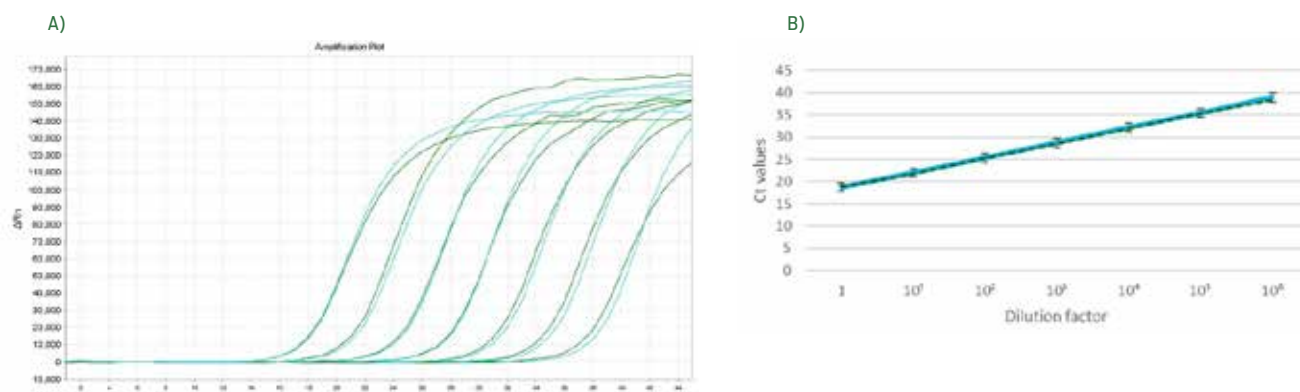
### Lyo NZYSupreme RT-qPCR Probe MM (2x)

MB41501 For 1.5 mL (150 x 20  $\mu$ L rxs)

### NEW Lyo NZYSupreme Multiplex RT-qPCR Probe MM (2x)

MB44301 For 1.5 mL (150 x 20  $\mu$ L rxs)

NZYSupreme One-step RT-qPCR Probe Master Mix vs Lyo NZYSupreme One-step RT-qPCR Probe Master Mix:  
Remarkable efficiency and sensitivity ensured in all formats available



High sensitivity and linearity of the two formulations of NZYSupreme One-step RT-qPCR Probe Master Mix – liquid (with glycerol) and lyophilized (tested after rehydrated with the respective reconstitution buffer), across a wide range of input RNA (from 375 ng to 0.375  $\mu$ g) to amplify the rpl27 mouse gene.

Panel A: Amplification curves evidencing the high reproducibility between the liquid (blue curves) and lyophilized (green curves) formats.

Panel B: Comparison of Ct variation across template dilutions.

## qPCR COMPONENTS

### DEPC-treated Water

MB43701 5 x 1 mL



## **RNA & cDNA**

**RNA SYNTHESIS**

**cDNA SYNTHESIS**

**RNases**

**RNA PROTECTION**



# RNA & cDNA

## RNA SYNTHESIS

NZYTech offers convenient kits for the *in vitro* transcription of DNA into RNA using a T7 RNA polymerase that is highly specific for T7 phage promoters. The enzyme is also provided separately for your routine protocols.

NZY T7 RNA Synthesis kit	
MB35301	50 reactions

NZY T7 High Yield RNA Synthesis kit	
MB36301	50 reactions

T7 RNA polymerase	
MB08001	10000 U (20 U/ $\mu$ L)
MB08003	10000 U (200 U/ $\mu$ L)

## cDNA SYNTHESIS

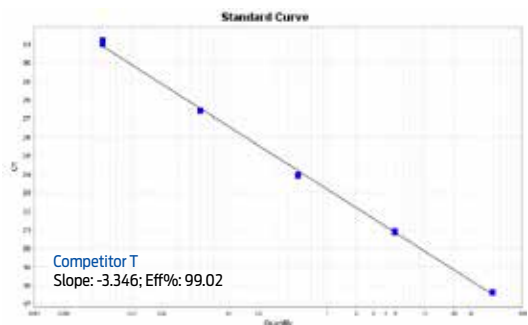
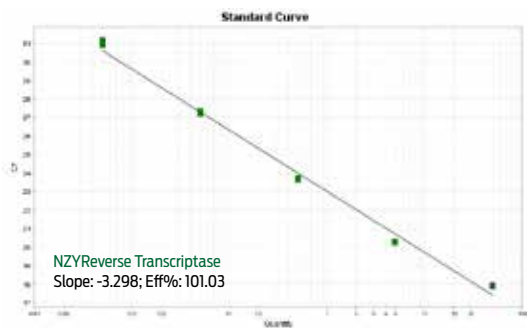
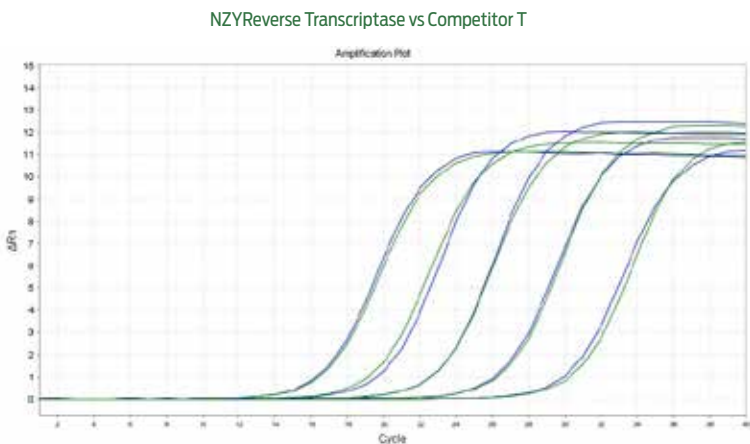
### Reverse transcriptases

NZY M-MuLV and NZY Reverse Transcriptases lack 3'-5' exonuclease activity and have no intrinsic RNase H activity. NZY Reverse Transcriptase is a thermostable (50-55 °C) and sensitive enzyme with fast synthesis capacity (30 min reaction). Supreme NZYReverse Transcriptase was recently developed to increase inhibitor resistance, range and thermostability.

NZY M-MuLV Reverse Transcriptase	
MB08301	20000 U
MB08302	100000 U

NZY Reverse Transcriptase	
MB12401	20000 U
MB12402	100000 U

Lyo NZY Reverse Transcriptase	
MB40901	100000 U



NZYReverse Transcriptase vs Competition. Two-step RT-qPCR to detect the GAPDH gene from mouse total RNA (dilutions from 1  $\mu$ g to 0.1 ng). After reverse transcription, the cDNA obtained was used in a qPCR assay with NZYSupreme qPCR Green Master Mix (2x) (Cat. No. MB419).

## cDNA kits

NZYTEch offers convenient, reliable and cost-effective kits to generate high quality cDNA for different downstream applications, such as standard PCR, cDNA library construction, or two-step RT-PCR assays. cDNA kits contain all the components required to synthesize first-strand cDNA (except the template RNA), at optimal conditions. A mixture of NZY Ribonuclease Inhibitor and one of the NZYTEch's reverse transcriptases is included in all kits. NZY First-Strand cDNA Synthesis kits provide more specific synthesis of cDNA, while NZY M-MuLV First-Strand Synthesis kits are a cost-effective alternative, also providing high yields of full-length cDNA at low reaction temperatures.

Features	NZY First-Strand cDNA Synthesis Kits	NZY M-MuLV First-Strand cDNA Synthesis Kits
Reverse Transcriptase	NZY Reverse Transcriptase	NZY M-MuLV Reverse Transcriptase
Product length	up to 7 kb	up to 7 kb
Optimal reaction temperature	50 °C	37 °C
Reaction time	30 min	50 min
Sensitivity	10 pg – 5 µg total RNA	10 pg – 5 µg total RNA
Amplification of GC-rich templates	yes	-
Amplification of secondary structure-rich templates	yes	-
Available as kits with separate oligos	yes	yes

⚠ NZY First-Strand cDNA Synthesis kit	
MB12501	50 reactions
MB12502	250 reactions

⚠ NZY cDNA Synthesis kit, sep. oligos	
MB17001	50 reactions
MB17002	250 reactions

⚠ NZY M-MuLV First-Strand cDNA Synthesis kit	
MB17201	50 reactions
MB17202	250 reactions

⚠ NZY M-MuLV cDNA Synthesis kit, sep oligos	
MB17301	50 reactions
MB17302	250 reactions

⚠ NZY First-Strand cDNA Synthesis Flexible Pack	
MB40001	200 reactions

## RNA primers

⚠ Oligo (dT) <sub>18</sub> primer mix	
MB12801	27 µg (100 µL)

⚠ Random hexamer mix	
MB12901	25 µg (500 µL)

**Oligo(dT)<sub>18</sub> primer:** hybridizes to the poly(A) tail found at the 3' - end of most eukaryotic mRNAs; frequently used when cDNA is used for cloning, cDNA library construction and qPCR

**Random hexamers:** priming ssDNA or RNA for extension by DNA polymerase or Reverse transcriptases; during cDNA synthesis, random hexamer will perform random priming throughout the entire length of the RNA to generate a cDNA pool containing various lengths of cDNA



# RNases

NZY RNase H ( <i>E. coli</i> )	
MB08501	250 U
MB08502	1250 U

NZY RNase A	
MB18701	100 mg

## RNA PROTECTION

NZYTech Ribonuclease Inhibitors are active againsts RNases (E. C. 3.1) of the pancreatic type (RNase A, B and C) and are useful in applications where eukaryotic RNase contamination is a potential problem. For reactions that do not tolerate higher levels of DTT, please use the oxidation-resistant NZY Ribonuclease Inhibitor (no DTT). RNase Cleaner is a reagent that completely removes RNase contamination surfaces and plasticware, allowing to maintain a RNase-free working area.

NZY Ribonuclease Inhibitor	
MB08401	2500 U
MB08402	5 x 2500 U

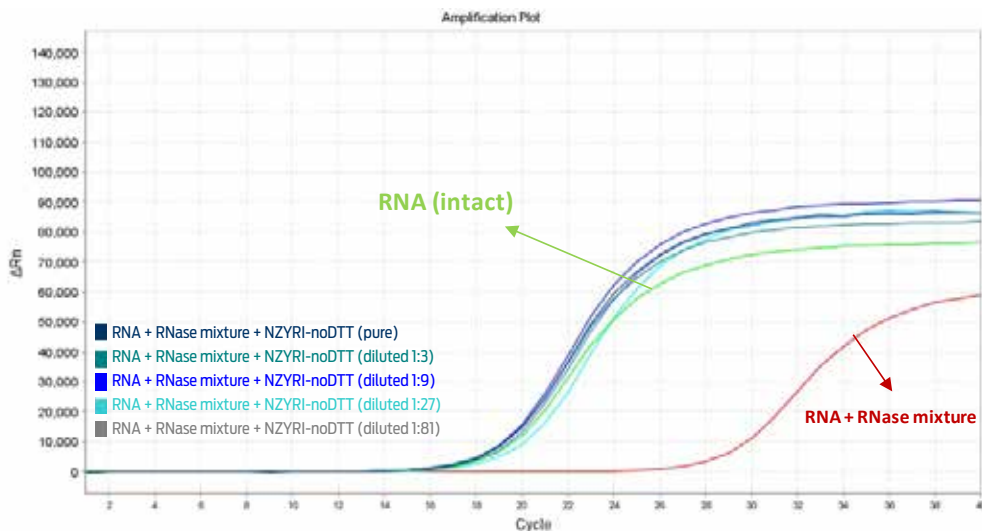
Lyo NZY Ribonuclease Inhibitor	
MB41102	20000 U
MB41103	5 x 20000 U

NZY Ribonuclease Inhibitor (no DTT)	
MB41001	2500 U
MB41002	5 x 2500 U

Lyo NZY Ribonuclease Inhibitor (no DTT)	
MB41202	100000 U
MB41203	5 x 20000 U

RNase Cleaner	
MB16001	500 mL

NZYRibonuclease Inhibitor (no DTT): Efficient protection of RNA against RNases in non-added DTT reactions



The ability of NZYRibonuclease Inhibitor (no DTT) to inhibit ribonuclease (RNase) activity was tested by pre-mixing 125 ng of mouse RNA with different amounts of the inhibitor enzyme (1:3 dilution series) and a cocktail of RNases from serum origin. No DTT was added in the reactions, which were incubated at 37 °C for 1 hour. A negative control (without NZYRibonuclease Inhibitor (no DTT)) and a positive control (only RNA not exposed to the RNases mixture) were introduced. The integrity of RNA was judged through a real-time one-step RT-qPCR experiment. Complete preservation of RNA integrity is observed in the presence of NZY Ribonuclease Inhibitor (no DTT) (in all dilutions tested), as measured by the successful amplification of the desired target in the real-time RT-PCR assay (the signal overlaps to that emitted by the positive control – intact RNA).



## restriction enzymes

CONVENTIONAL  
SPEEDY

# RESTRICTION ENZYMES

NZYTEch offers a vast portfolio of restriction enzymes used in recombinant DNA technology. We present two different types of enzymes: Conventional and Fast Digestion (Speedy). Each conventional restriction enzyme is provided with a specific reaction buffer in which the enzyme is 100% active. For double digestions, we recommend to use the 10x NZYBuffer U (sold separately). Speedy restriction enzymes are a new generation of DNA modifying enzymes that were developed for rapid DNA digestion (digestion periods range from 5-15 min) and are 100% active in the 10x NZYSpeedy Buffers Colourless or Orange.

## CONVENTIONAL



<b>AscI</b> GG↓CGCGCC	MB23101	500 U	<b>HpaI</b> GTT↓AAC	MB07101	500 U
	MB23102	2500 U		MB07102	2500 U
<b>BglII</b> A↓GATCT	MB06501	1000 U	<b>MboI</b> ↓GATC	MB24101	1000 U
	MB06502	5000 U		MB24102	5000 U
<b>DdeI</b> C↓TNAG	MB23601	500 U	<b>MluI</b> A↓CGCGT	MB24301	1000 U
	MB23602	2500 U		MB24302	5000 U
<b>DpnI</b> G(mA)↓TC	MB07801	100 U	<b>NcoI</b> C↓CATGG	MB06601	500 U
	MB07802	1000 U		MB06602	2500 U
<b>DpnII</b> ↓GATC	MB23301	1000 U	<b>PstI</b> CTGCA↓G	MB07301	4000 U
	MB23302	5000 U		MB07302	20000 U
<b>EcoRI</b> G↓AATTC	MB06701	5000 U	<b>SalI</b> G↓TCGAC	MB07701	2000 U
	MB06702	25000 U		MB07702	10000 U
<b>HindIII</b> A↓AGCTT	MB07001	5000 U	<b>TaqI</b> T↓CGA	MB23501	1000 U
	MB07002	25000 U		MB23502	5000 U
<b>HinfI</b> G↓ANTC	MB23901	500 U	<b>XhoI</b> C↓TCGAG	MB07401	2000 U
	MB23902	2500 U		MB07402	10000 U

## SPEEDY



<b>Speedy AscI</b> GG↓CGCGCC	MB23201	50 reactions
	MB23202	250 reactions
<b>Speedy BglII</b> A↓GATCT	MB09301	100 reactions
	MB09302	500 reactions
<b>Speedy DpnII</b> ↓GATC	MB23401	100 reactions
	MB23402	500 reactions
<b>Speedy EcoRI</b> G↓AATTC	MB09501	500 reactions
	MB09502	2500 reactions
<b>Speedy HindIII</b> A↓AGCTT	MB09701	500 reactions
	MB09702	2500 reactions
<b>Speedy HinfI</b> G↓ANTC	MB24001	50 reactions
	MB24002	250 reactions
<b>Speedy HpaI</b> GTT↓AAC	MB09801	50 reactions
	MB09802	250 reactions

<b>Speedy MboI</b> ↓GATC	MB24201	100 reactions
	MB24202	500 reactions
<b>Speedy MluI</b> A↓CGCGT	MB24401	100 reactions
	MB24402	500 reactions
<b>Speedy NcoI</b> C↓CATGG	MB10001	50 reactions
	MB10002	250 reactions
<b>Speedy PstI</b> CTGCA↓G	MB10301	400 reactions
	MB10302	2000 reactions
<b>Speedy Sall</b> G↓TCGAC	MB10401	200 reactions
	MB10402	1000 reactions
<b>Speedy XhoI</b> C↓TCGAG	MB10701	200 reactions
	MB10702	1000 reactions

## Buffers

### 10x NZYBuffer U

MB11001	500 µL
MB11002	1000 µL







**DNA & RNA modifying enzymes**

**LIGASES**

**POLYMERASES**

**NUCLEASES**

**OTHER MODIFYING ENZYMES**

# DNA & RNA MODIFYING ENZYMES

NZYTEch offers a variety of enzymes optimized for the development of different molecular biology protocols, including nucleases, polymerases, ligases, DNA binding enzymes and others.

## LIGASES

### T4 DNA Ligase

MB00703	500 U
MB00704	2500 U

### DNA Ligase (*E. coli*)

MB42401	200 U
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### Taq DNA Ligase

MB42601	2000 U
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### T4 dsRNA Ligase

MB42801	150 U
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### Speedy Ligase

MB13001	50 ligations
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### T7 DNA Ligase

MB42501	100000 U
---------	----------

### T4 ssRNA Ligase

MB42701	1000 U
---------	--------

## POLYMERASES

### DNA Polymerase I (*E. coli*)

MB42001	500 U
---------	-------

### Klenow Fragment, (exo -)

MB42101	200 U
---------	-------

### phi29 DNA Polymerase

MB42301	250 U
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### Klenow Fragment of DNA Polymerase I

MB00901	300 U
---------	-------

### T4 DNA Polymerase

MB42201	150 U
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### **NEW** NZY Bst DNA Polymerase

MB44401	200 µL
MB44402	3 x 200 µL

## NUCLEASES

### Endonuclease V (*E. coli*)

MB21301 250 U

### UltraPrecise T7 Endonuclease I

MB34001 50 reactions  
MB34002 200 reactions

### NZY DNase I

MB19901 200 U/vial

### Exonuclease III (*E. coli*)

MB43001 5000 U

### Exonuclease VII (*E. coli*)

MB43201 200 U

### T7 Endonuclease I

MB21201 250 U

### Nt.BbvCI, Nicking Endonuclease

MB09401 1000 U  
MB09402 5000 U

### Exonuclease I (*E. coli*)

MB42901 3000 U

### Endonuclease IV (Tth)

MB43101 500 U

### T5 Exonuclease

MB43301 1000 U

## OTHER MODIFYING ENZYMES

### MutS (*E. coli*)

MB21101 50 µg  
MB21102 250 µg

### *dam* Methyltransferase

MB43401 500 U

### T4 Polynucleotide Kinase (T4 PNK)

MB00801 500 U

### **NEW** NZY Uracil-DNA Glycosylase

MB44601 100 µL  
MB44602 3 x 100 µL

### Topoisomerase I (*E. coli*)

MB43501 100 U

### Alkaline Phosphatase (*E. coli*)

MB01801 200 U

### **NEW** NZY Thermolabile Uracil-DNA Glycosylase

MB44501 100 µL  
MB44502 3 x 100 µL







## **DNA cloning and mutagenesis kits**

**EASY CLONING & EXPRESSION**

**STANDARD CLONING**

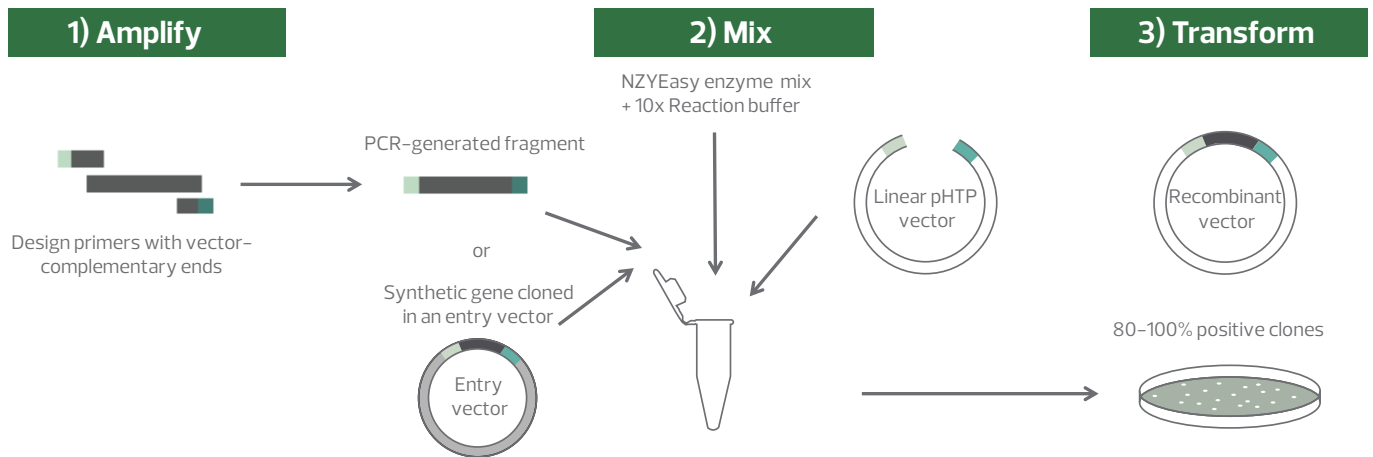
**DNA MUTAGENESIS**



# DNA CLONING KITS

## EASY CLONING & EXPRESSION

The NZYEasy Cloning & Expression System was designed to allow directional cloning of PCR-generated fragments or synthetic genes previously cloned in pUC-vectors into a linearized pHTP vector in a single reaction mediated by NZYEasy enzyme mix. The system allows achieving high cloning efficiencies and does not require the use of DNA ligases. In addition, no further treatment (e.g. restriction digestion, phosphorylation or blunt-end polishing) of the inserts is required.



NZYTEch provides ready-to-use pHTP vectors in separate kits. The portfolio of pHTP prokaryotic expression vectors, which includes a different range of fusion tags, offers the possibility to quickly assay levels of expression and solubility of the desired protein in multiple expression vectors simultaneously. Choose the pHTP vectors that most suits your experiments on the table below:

Vector	Features	Comments	Kit Cat. No.
<b>pHTP0</b>	<i>lac</i> promoter and <i>lacZ_a</i> reporter	High-copy number cloning vector for the NZYEasy Cloning & Expression System; allows blue/white screening during cloning (if adding IPTG and X-GAL)	MB281
<b>pHTP1</b>	N- and/or C-terminal 6xHis	Standard vector for high-level protein expression in <i>E. coli</i>	Kit I, MB282
<b>pHTP2</b>	N- and/or C-terminal 6xHis; N-terminal LLDsbC	Leader Less DsbC promotes cytoplasmic isomerization of disulfide bonds	Kit II, MB319
<b>pHTP3</b>	N- and/or C-terminal 6xHis; N-terminal mutDsbC	Inactive DsbC promotes cytoplasmic solubilization without isomerization of disulfide bonds	Kit III, MB320
<b>pHTP4</b>	N- and/or C-terminal 6xHis; N-terminal DsbC	DsbC promotes periplasmic isomerization of disulfide bonds	Kit IV, MB321
<b>pHTP7</b>	N- and/or C-terminal 6xHis; N-terminal DsbA	DsbA promotes periplasmic formation of disulfide bonds	Kit VII, MB322
<b>pHTP8</b>	N- and/or C-terminal 6xHis; N-terminal Trx	Trx enhances solubility of tagged proteins	Kit VIII, MB323
<b>pHTP9</b>	N- and/or C-terminal 6xHis; N-terminal GFP	GFP is a reporter molecule that allows monitoring protein localization	Kit IX, MB324
<b>pHTP10</b>	N- and/or C-terminal 6xHis; N-terminal NusA	NusA enhances solubility of tagged proteins	Kit X, MB325
<b>pHTP11</b>	N- and/or C-terminal 6xHis; N-terminal GST	GST enables glutathione-based affinity purification of tagged proteins while enhancing protein solubility	Kit XI, MB326
<b>pHTP13</b>	N- and/or C-terminal 6xHis; N-terminal GB1	GB1 enhances solubility of tagged proteins	Kit XIII, MB327
<b>pHTP14</b>	N- and/or C-terminal 6xHis; N-terminal KSI	KSI enhances solubility of tagged proteins	Kit XIV, MB328
<b>pHTP16</b>	N- and/or C-terminal 6xHis; N-terminal CpA	CpA enhances solubility of tagged proteins	Kit XVI, M3290
<b>pHTP17</b>	N- and/or C-terminal 6xHis; N-terminal CpB	CpB enhances solubility of tagged proteins	Kit XVII, MB330

PCR-generated fragments can be cloned into the pHTP0 cloning vector (included in the NZYEasy Cloning kit) or, alternatively, into one of the various kanamycin-resistant pHTP expression vectors (included in the different NZYEasy Cloning & Expression kits) without the need to go through the tedious and laborious intermediate stages.

## DNA Cloning

The NZYEasy Cloning kit was designed for time-saving and cost-effective DNA cloning. It includes the pHTP0 vector (pUC-derivative) that allows blue/white screening for positive bacterial colonies (if adding IPTG and X-GAL).

### NZYEasy Cloning kit

MB28101	8 reactions
MB28103	96 reactions

## DNA Cloning & Expression

NZYEasy Cloning & Expression kits include different expression vectors that use the T7/*lac* promoter for regulated high-level protein expression in *E. coli* strains containing the  $\lambda$ DE3 lysogen, such as BL21(DE3).

### NZYEasy Cloning & Expression kit I

MB28201	8 reactions
MB28203	96 reactions

### NZYEasy Cloning & Expression kit II

MB31901	8 reactions
MB31903	96 reactions

### NZYEasy Cloning & Expression kit III

MB32001	8 reactions
MB32003	96 reactions

### NZYEasy Cloning & Expression kit IV

MB32101	8 reactions
MB32103	96 reactions

### NZYEasy Cloning & Expression kit VII

MB32201	8 reactions
MB32203	96 reactions

### NZYEasy Cloning & Expression kit VIII

MB32301	8 reactions
MB32303	96 reactions

 **NZYEasy Cloning & Expression kit IX**

MB32401 8 reactions  
MB32403 96 reactions

 **NZYEasy Cloning & Expression kit X**

MB32501 8 reactions  
MB32503 96 reactions

 **NZYEasy Cloning & Expression kit XI**

MB32601 8 reactions  
MB32603 96 reactions

 **NZYEasy Cloning & Expression kit XIII**

MB32701 8 reactions  
MB32703 96 reactions

 **NZYEasy Cloning & Expression kit XIV**

MB32801 8 reactions  
MB32803 96 reactions

 **NZYEasy Cloning & Expression kit XVI**

MB32901 8 reactions  
MB32903 96 reactions

 **NZYEasy Cloning & Expression kit XVII**

MB33001 8 reactions  
MB33003 96 reactions

## STANDARD CLONING

NZYTech's DNA cloning kits are optimized to provide high-efficiency cloning based on easy protocols with no requirement for time-consuming restriction digests. To clone PCR-amplified fragments take into account the type of DNA polymerase that was used to generate the DNA fragment and choose the appropriate cloning kit: NZY-A PCR cloning kits are designed for cloning of DNA fragments amplified using non-proofreading polymerases, while NZY-blunt PCR cloning kit is designed to clone blunt-end PCR products amplified by proofreading enzymes. For a faster DNA cloning, the speedy version of NZY-A PCR cloning kit (NZY-A Speedy PCR cloning kit) should be chosen.

### Blunt-end

NZY-blunt PCR cloning kit was designed to allow the direct cloning of PCR products with blunt-ends which result from amplifications using proofreading DNA polymerases such as NZYProof DNA polymerase (MB146).

#### NZY-blunt PCR cloning kit

MB12101	24 ligations + competent cells
MB12102	24 ligations

### A-overhang

NZY-A PCR cloning kits were designed to clone PCR products produced by non-proofreading DNA polymerases such as NZYTaq II DNA polymerase (MB354). They take advantage of the terminal transferase activity of these polymerases which adds a single 3'-A overhang to each end of the PCR product. For a faster DNA cloning, NZYTech provides the NZY-A Speedy PCR cloning kit which allows direct cloning of PCR products with 3'-A overhangs in only 5 minutes at room temperature. Blunt-ended PCR fragments generated by amplification with proofreading polymerases can also be cloned using NZY-A PCR cloning kits after conducting an A-tailing procedure.

#### NZY-A PCR cloning kit

MB05301	24 ligations + competent cells
MB05302	24 ligations

#### NZY-A Speedy PCR cloning kit

MB13701	24 ligations + competent cells
MB13702	24 ligations

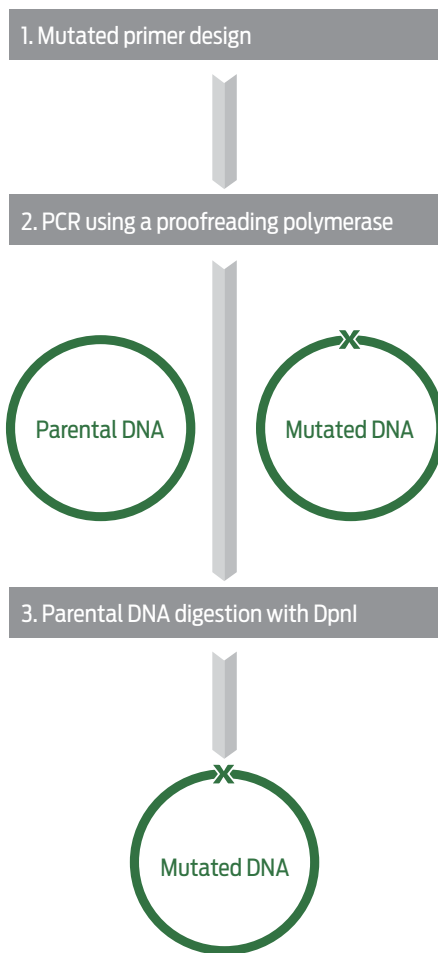
High efficiency cloning: >95% positive clones  
Blue/white colony screening  
5 minutes cloning with NZY-A Speedy PCR cloning kit



# DNA MUTAGENESIS

Site-Directed Mutagenesis can help you in a range of applications allowing to edit the desired DNA sequence by incorporation of single or multiple point mutations in any type of plasmid DNA. NZYTech's Mutagenesis kits provide simple and highly efficient methods to generate point mutations and delete or insert single (or multiple) nucleotides in plasmid DNA using PCR. NZYSupreme Mutagenesis kit was recently developed to reduce labor time and increase the efficiency of DNA editing.

Mutagenesis kits contain a proofreading DNA polymerase for PCR amplification of dsDNA plasmid to be mutated. NZYSupreme Mutagenesis kit includes Supreme NZYProof DNA polymerase, an engineered highly accurate, fast and sensitive variant of NZYProof DNA polymerase (the DNA polymerase present in NZYMutagenesis kit), formulated in a 2x concentrated master mix solution. Both Supreme NZYProof and NZYProof DNA polymerases ensure high fidelity for the exponential PCR amplification, thus reducing the unwanted secondary mutations and enabling amplification of large plasmids up to 15 kb. In addition, mutagenesis system requires the provision of two synthetic oligonucleotide primers containing the desired mutation. Mutated primers can be designed following standard guidelines (overlapping primers) or using an improved methodology (non-overlapping primers) recommended on NZYSupreme Mutagenesis kit. The mutagenesis protocol includes only three main steps:



### 1. Mutated primer design

Primers should have between 25 and 45 bases in length, with a melting temperature ( $T_m$ ) of  $\geq 78$  °C; a GC content of 40% and should terminate in one or more C or G bases;

### 2. PCR amplification

Extension of the oligonucleotide primers with a proofreading DNA polymerase generates a mutated plasmid containing staggered nicks;

### 3. Digestion with DpnI

Digestion of PCR product with DpnI endonuclease for elimination of the parental methylated and hemimethylated DNA template and selection of the mutation-containing synthetic DNA (not methylated).

NZYTech provides convenient versions of the kit, which include highly efficient competent cells for mutated plasmid recovering.

	NZYMutagenesis kit	NZYSupreme Mutagenesis kit
Primer design:	Standard (overlapping primers)	Improved (non-overlapping primers)
DNA polymerase:	NZYProof DNA polymerase	Supreme NZYProof 2x Colourless Master Mix
PCR time:	2h 30	<1h 30 min
Digestion time:	1 hour (at 37 °C)	5-15 min (at 37 °C)

#### NZYMutagenesis kit

- MB01201      10 mutations
- MB01202      10 mutations + competent cells

#### NZYSupreme Mutagenesis kit

- MB44701      10 mutations
- MB44702      10 mutations + competent cells



# competent cells & media

COMPETENT CELLS

CELL PREPARATION & GROWTH

# COMPETENT CELLS & MEDIA

## COMPETENT CELLS

Efficient DNA transformation of *Escherichia coli* competent cells is essential for successful cloning and protein expression applications. NZYTech offers competent *E. coli* host strains for high-efficiency transformation.

NZY5α	
MB00401	20 transformations
MB00402	40 transformations

NZYStar	
MB00501	20 transformations
MB00502	40 transformations

### NZY5α

10<sup>9</sup> cfu/μg of pUC19

Blue/White colony screening

Routine cloning

Genotype: *fhuA2fj(argF-lacZ)U169 phoA glnV44Ψ80 fj(lacZ)M15 gyrA96recA1 relA1 endA1 thi-lhsdR17*



### NZYStar

10<sup>9</sup> cfu/μg of pUC19

Blue/White colony screening

High quality plasmid preparation

Construction of cDNA libraries/gene banks

Genotype: *endA1 hsdR17(rk-, mk+) supE44 thi -1 recA1 gyrA96 relA1 lac[F'proA+B+ lac-lqZfjM15:Tn10(TcR)]*





# CELL PREPARATION & GROWTH

## Competent cells preparation

NZYCompetent Cells Preparation Buffer is designed for the preparation of super competent *Escherichia coli* cells. The method is compatible with the classical heat shock transformation procedure and the transformation efficiencies are typically on the order of  $10^8$ - $10^9$  transformants/ $\mu$ g plasmid DNA with the most common *E. coli* strains.

### NZYCompetent Cells Preparation Buffer

MB12001	100 mL
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## Culture media

NZYTech offers a selection of high quality culture media for a wide variety of applications. Our specific formulations were extensively tested for use in cloning, plasmid DNA preparation and protein expression.

### Agar Granulated

MB02902	500 g
MB02903	1000 g

### LB Broth (granulated)

MB02802	500 g
MB02803	1000 g

### Tryptone

MB16701	1000 g
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### LB Agar

MB11802	1000 g
---------	--------

### LB Broth (powder)

MB14501	500 g
MB14502	1000 g

### LB Agar Lennox

MB38901	500 g
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### SOC Broth

MB28001	500 g
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### Sodium Chloride (NaCl)

MB15901	1000 g
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### Yeast Extract, Micro Granulated

MB16401	1000 g
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## Auto-Induction media

NZY Auto-Induction LB medium (powder) is an innovative culture medium developed for growing *Escherichia coli* to high cell densities, while obtaining high-levels of recombinant protein expression when using IPTG-inducible bacterial expression systems.

### NZY Auto-Induction LB medium (powder)\*

MBI7901	100 g
MBI7903	1000 g

No need for IPTG induction  
No need to monitor cell growth  
Ideal for High-Throughput (HTP) methods  
High protein yields

\* Product not available for use or sale in the United States

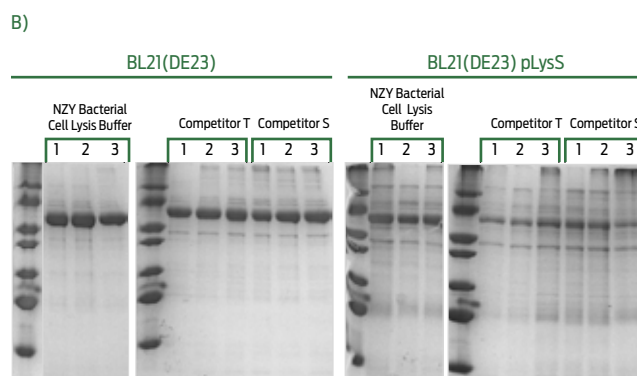
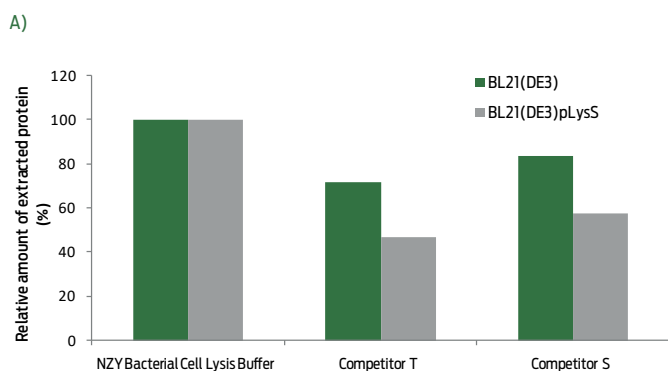
## Cell disruption

NZY Bacterial Cell Lysis Buffer is an innovative product for the gentle disruption of *Escherichia coli* cell wall that generates a homogeneous cell-free extract. It provides a rapid and cost effective alternative to mechanical methods such as French Press or sonication for releasing recombinant and native proteins. This extraction reagent is a Tris buffered formulation (pH 7.5) with Lysozyme and DNase I provided separately.

### NZY Bacterial Cell Lysis Buffer

MBI7801	250 mL
MBI7802	2 x 250 mL

Ready-to-use formulation  
Ideal for High-Throughput (HTP) methods  
DNase I and Lysozyme provided separately



Comparing the efficiency of *Escherichia coli* cell lysis for protein extraction using NZY Bacterial Cell Lysis Buffer and two similar competitor products. Cells from two strains of *E. coli* BL21(DE3) and BL21(DE3 pLysS) were harvested from 5 mL of cultured media and lysed (in triplicates) using three different protein extraction chemicals: NZY Bacterial Cell Lysis Buffer, Competitor T and Competitor S.

A) Levels of extracted protein obtained were evaluated. B) The recombinant proteins (in triplicates) were purified through IMAC and separated through SDS-PAGE.



## **ladders & markers**

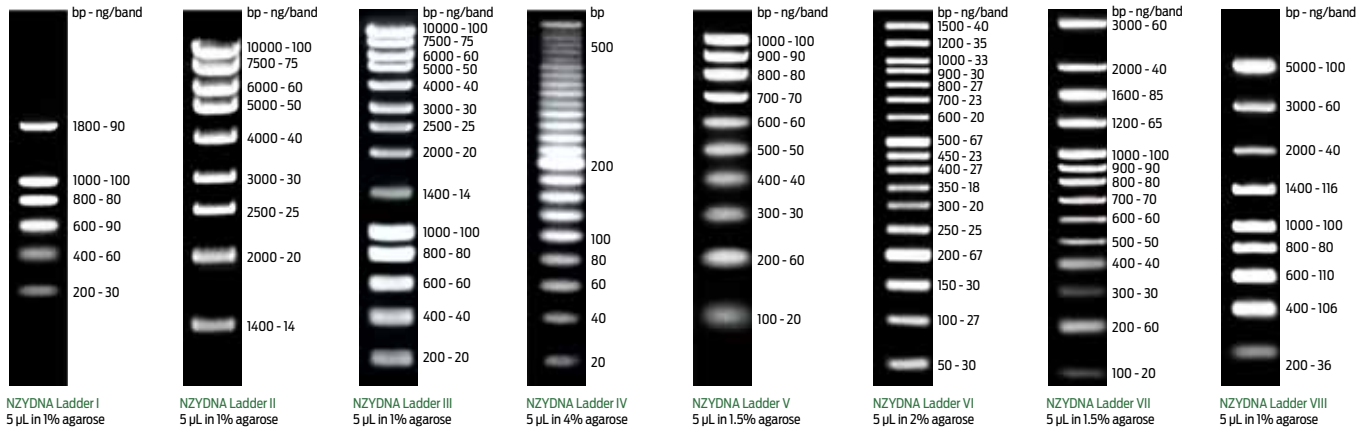
**DNA LADDERS**

**PROTEIN MARKERS**

# LADDERS & MARKERS

## DNA LADDERS

NZYTech offers a ready-to-use set of DNA ladders suitable for standard gel electrophoresis applications. Ladders can be used to quantify the acid nucleic concentration based on band intensity and/or to accurately determine the molecular weight of the nucleic acids molecules.



### NZYDNA Ladder I

MB04101	90 µg (200 lanes)
MB04102	225 µg (500 lanes)

### NZYDNA Ladder II

MB04301	83 µg (200 lanes)
MB04302	207 µg (500 lanes)

### NZYDNA Ladder III

MB04401	143 µg (200 lanes)
MB04402	357 µg (500 lanes)

### NZYDNA Ladder IV

MB05801	10 µg (50 lanes)
MB05802	30 µg (150 lanes)

### NZYDNA Ladder V

MB06101	120 µg (200 lanes)
MB06102	300 µg (500 lanes)

### NZYDNA Ladder VI

MB08901	100 µg (200 lanes)
MB08902	250 µg (500 lanes)

### NZYDNA Ladder VII

MB14701	170 µg (200 lanes)
MB14702	425 µg (500 lanes)

### NZYDNA Ladder VIII

MB17501	150 µg (200 lanes)
MB17502	375 µg (500 lanes)

# PROTEIN MARKERS

NZYTEch provides different ready to-use protein markers containing unstained or stained proteins. All protein markers are mixtures of highly purified proteins of known molecular weight developed for assessing proteins relative molecular weights.

## Low Molecular Weight Protein Marker II

MB21401	3 x 0.5 mL (300 lanes)
MB21402	6 x 0.5 mL (600 lanes)

## NZYColour Protein Marker I

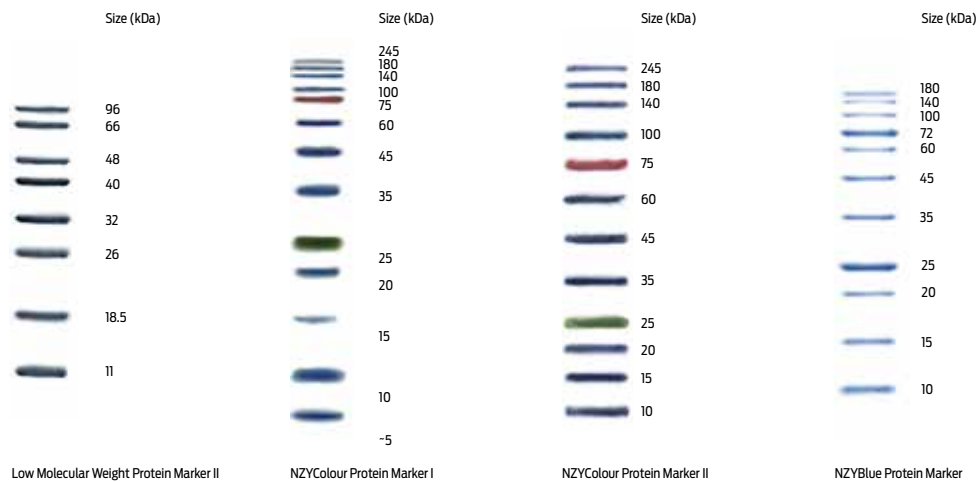
MB21501	1 x 0.5 mL (125 lanes)
MB21502	4 x 0.5 mL (500 lanes)

## NZYColour Protein Marker II

MB09002	1 x 0.5 mL (125 lanes)
MB09003	4 x 0.5 mL (500 lanes)

## NZYBlue Protein Marker

MB17601	1 x 0.5 mL (125 lanes)
MB17602	4 x 0.5 mL (500 lanes)







## loading & staining

LOADING

STAINING



# LOADING & STAINING

## LOADING

### For DNA

#### 6x NZYDNA loading dye

MB13101 5 x 1 mL

### For Proteins

#### 5x SDS-PAGE sample loading buffer

MB11701 5 x 1 mL

## STAINING

### For DNA

NZYTech offers a DNA stain that can be used as a safer alternative to the traditional ethidium bromide (EtBr) and presenting equal sensitivity. GreenSafe Premium can be either incorporated in the agarose gels or used post-running.

#### GreenSafe Premium

MB13201 1 mL

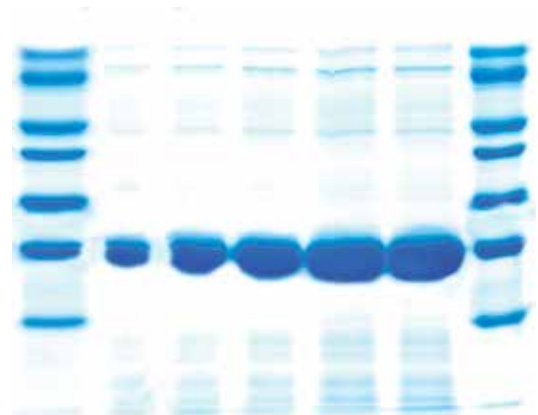
### For Proteins

As an alternative to the traditional Coomassie Blue staining for detecting proteins in SDS-PAGE, NZYTech offers BlueSafe, a very sensitive and safe single-step protein stain.

#### BlueSafe

MB15201 1000 mL

BlueSafe: High contrast and sensitivity





## agaroses & buffers

AGAROSSES

READY-TO-USE BUFFERS

# AGAROSSES & BUFFERS

## AGAROSSES

NZYTEch offers two different agaroses that cover the most used applications in the laboratory.

	Analytical separation ≥ 0.5 kb	Preparative electrophoresis	DNA typing	Blotting
Electrophoresis grade	✓		✓	✓
Ultrapure grade	✓	✓	✓	✓

### Agarose (electrophoresis grade)

MB02702	100 g
MB02703	500 g
MB02704	1000 g

### Agarose (ultrapure grade)

MB05201	100 g
MB05202	500 g

## READY-TO-USE BUFFERS

### PBS (10x) pH 7.4 (liquid)

MB25201	1000 mL
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### TAE Buffer (50x) pH 8.3 (liquid)

MB20901	1000 mL
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### PBS (10x) pH 7.4 (powder)

MB18201	1 pouch (1 x 10 L)
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### TBE Buffer (10x) (liquid)

MB27701	1000 mL
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# antibiotics & biochemicals

ANTIBIOTICS

BIOCHEMICALS

# ANTIBIOTICS & BIOCHEMICALS

## ANTIBIOTICS

### Ampicillin (sodium salt)

MB02101	5 g
MB02102	25 g
MB02103	50 g

### Chloramphenicol

MB02402	25 g
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### Kanamycin Monosulphate

MB02001	5 g
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### Carbenicillin (disodium)

MB16501	5 g
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### Gentamicin (sulphate)

MB16601	5 g
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## BIOCHEMICALS

### D(+) - Glucose Anhydrous

MB16801	1000 g
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### Glycerol

MB16101	1000 mL
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### IPTG

MB02602	5 g
MB02603	25 g

### DEPC-treated Water

MB43701	5 x 1 mL
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### NaCl

MB15901	1000 g
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### X-Gal

MB02501	1 g
MB02502	5 g

### Water for Molecular Biology

MB11101	1000 mL
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# **protein electrophoresis & blotting**

**PROTEIN QUANTIFICATION**

**PROTEIN ELECTROPHORESIS & TRANSFER**

**WESTERN BLOTTING**

# PROTEIN ELECTROPHORESIS & BLOTTING

## PROTEIN QUANTIFICATION

### NZY Bradford reagent

MB19801 500 mL

## PROTEIN ELECTROPHORESIS & TRANSFER

### Acrylamide/bis-Acrylamide (29:1 Solution)

MB04501 500 mL

### Tris-Glycine-SDS Buffer (liquid)

MB19501 1000 mL

### Acrylamide/bis-Acrylamide (37.5:1 Solution)

MB15601 500 mL

### Tris-Glycine Buffer (liquid)

MB19401 1000 mL

### DTT

MB03101 5 g

### Ammonium Persulphate (APS)

MB03403 100 g

### SDS Solution 20%

MB11601 500 mL

### Glycine

MB01401 1000 g

### Tris base

MB01601 1000 g

### SDS Powder

MB18101 500 g

### TEMED

MB03501 25 mL

## WESTERN BLOTTING

### BSA (Bovine Serum Albumin, Fraction V)

MB04601 10 g

MB04602 100 g

MB04603 1000 g

### Milk, Dry Powder

MB26001 100 g

### NZY Standard ECL

MB40101 250 mL

### NZY Advanced ECL

MB40201 250 mL





# PDZ domains & venom peptides

# PDZ DOMAINS

PDZ domains are structural modules of 80 to 90 amino acids found in signaling proteins of bacteria, yeast, plants, viruses and animals (Vicentelli et al. 2015, Nature Methods 12, 787-93). PDZ is an acronym combining the first letters of three proteins, which were first discovered to contain these domains: Post synaptic density protein (PSD95), Drosophila disc-large tumor suppressor (Dlg1), and Zonula occludens-1 protein (zo-1). PDZ domains play an essential role in a number of cellular processes by facilitating protein scaffolding and assembly of protein complexes. Protein complex formation between PDZ target molecules can lead to a number of signaling and regulatory cascades that may either promote or inhibit the activation of certain proteins. NZYTech offers a library of representative recombinant PDZ domains of the human proteome which includes 120 different constructs. For more information, please visit NZYTech website at [www.nzytech.com](http://www.nzytech.com).

# VENOM PEPTIDES

Animal venoms are highly complex molecular cocktails containing a wide range of biologically active peptides that target, with high selectivity and efficacy, a variety of membrane receptors. These peptides and their biological activities possess important pharmacological, therapeutic and biotechnological values. Venom peptides are highly stable molecules displaying formidable affinity and selectivity while presenting low immunogenicity, making them attractive candidates for the development of novel therapeutics.

Venom peptides generally contain between 20 to 120 residues and include up to eight disulfide bonds that are critical for both biological activity and stability.

In recent years, considerable emphasis is being put on the discovery of novel molecules with therapeutic interest and venom peptides appear as a source of potential drugs. Unfortunately, the use of venom peptides as therapeutic or biotechnological molecules is still hampered by the difficulty to produce native and active proteins in sufficient amounts. In order to increase the availability of these molecules for academic or pharmaceutical partners, NZYTech is proud to offer a library of representative animal recombinant Venom Peptides. Our recombinant Venom Peptides are subjected to a variety of highly stringent quality control protocols to reach high purity levels. For more information, please visit NZYTech website at [www.nzytech.com](http://www.nzytech.com).



## labware

PIPETTES & TIPS

PCR TUBES, PLATES & STRIPS

ADHESIVE SEALS

# LABWARE

At NZYTech we believe your PCR samples are too precious for low quality consumables. Please test NZYTech thoroughly optimized and proved labware and take your PCR amplifications to the next level. Regarding PCR Plates and Strips compatibility please refer to [www.nzytech.com](http://www.nzytech.com)

## PIPETTES & TIPS

### Tips 0.5-10 $\mu$ L (bulk)

LW00101 1000 units

### Tips 0.5-10 $\mu$ L (rack sterile)

LW00102 96x10

### Tips 20-200 $\mu$ L (bulk)

LW00203 1000 units

### Tips 20-200 $\mu$ L (rack sterile)

LW00204 96x10

### Tips 100-1000 $\mu$ L (bulk)

LW00301 1000 units

### Tips 100-1000 $\mu$ L (rack sterile)

LW00302 100x10

### Micropipettes

(single and multichannel; individual and sets)

## PCR TUBES, PLATES & STRIPS

### 0.2 mL Individual PCR tubes with flat caps

LW01301 1000 tubes

### Strip 8 x 0.2 mL PCR tubes w/ optically caps

LW03801 120 strips

### Strips of 8 flat optical caps

LW03201 300 strips

### Strip of 8 x 0.2 mL tubes flat strip caps

LW01201 125 strips + caps

### Low P. 96 well semi sk. PCR plate, Roche, white

LW04101 50 plates

### 96 Well non-skirted PCR plate, white

LW02601 50 plates

### 96 Well non-skirted PCR plate

LW00901 50 plates

### 96 Well semi skirted PCR plate, white

LW03601 50 plates

### 96 Well semi skirted PCR plate

LW00801 50 plates

### 96 Well skirted PCR plate, white

LW02501 50 plates

### 96 Well skirted PCR plate

LW00701 50 plates

## ADHESIVE SEALS

### General adhesive plate seals

LW01701 100 sheets

### qPCR adhesive clear plate seals

LW02101 100 sheets

### Adhesive PCR plate seals

LW01801 100 sheets

# LABWARE COMPATIBILITY

Skirt type	Skirted		Half-Skirted			Non-Skirted		Strips	
Number of wells	96		96			96		8	
Profile	Low		Standard		Low	Standard		200µL	100µL
Colour type	Clear	White	Clear	White		Clear	White	Clear	
Catalogue Number	LW00701	LW02501	LW00801	LW03601	LW04101	LW00901	LW02601	LW08001	LW03901

## ABI® / Life Technologies/ Thermo Fisher Scientific

Thermal Cyclers	GeneAmp® 2400							✓	
	GeneAmp® 2700, 2720, 9600			✓	✓		✓	✓	
	GeneAmp® 9700			✓	✓		✓	✓	
	GeneAmp® 9800 FAST Block								✓
	MultiBlock System, MBS	✓	✓						✓
	PCR Sprint						✓	✓	✓
	ProFlex 96 well			✓	✓		✓	✓	
	Simpliamp						✓	✓	✓
	Veriti 0.1 ml (96 well block) FAST								✓
	Veriti 0.2 ml (96 well block)			✓	✓		✓	✓	✓
qPCR Cyclers	7000, 7300, 7500, 7700, 7900			✓	✓			✓	
	QuantStudio™ 3, 5, 6, 7, 12K, Dx			✓	✓				
	StepOne, StepOne Plus™								
	ViiA7™			✓	✓		✓	✓	✓
Sequencers	310, 3100, 3130, 3130 XL Genetic Analyser			✓	✓		✓	✓	
	3500, 3500 XL Genetic Analyser			✓	✓		✓	✓	
	3700, 3730, 3730XL DNA Analyser			✓	✓		✓	✓	

## Agilent (Stratagene)

Thermal Cyclers	Surecycler 8800 96 well					✓	✓		
	Gradient Cycler	✓	✓			✓	✓		
qPCR Cyclers	AriaMx	✓	✓			✓	✓		
	Mx3000P™					✓	✓		
	Mx3005P™	✓	✓			✓	✓		
	Mx4000™			✓	✓		✓	✓	

## Biometra

Thermal Cyclers	Flexcycler2 96			✓	✓		✓	✓	✓
	T1 Thermocycler, Tgradient			✓	✓		✓	✓	✓
	T3 Thermocycler							✓	
	Tone, Tadvanced (96), TProfessional Gradient/XL			✓	✓		✓	✓	✓
	TRIO, Tpersonal						✓	✓	✓
	Trobot 96			✓	✓				
	SpeedCycler2			✓	✓		✓	✓	✓
qPCR Cyclers	qTOWER3/G, touch	✓	✓	✓	✓		✓	✓	✓
	Optical Thermalcycler			✓	✓		✓	✓	✓



Skirt type	Skirted		Half-Skirted			Non-Skirted		Strips	
Number of wells	96		96			96		8	
Profile	Low		Standard		Low	Standard		200µL	100µL
Colour type	Clear	White	Clear	White		Clear	White	Clear	
Catalogue Number	LW00701	LW02501	LW00801	LW03601	LW04101	LW00901	LW02601	LW03801	LW03901

### Bioer Technologies

Thermal Cyclers	GeneTouch			⊗	⊗		⊗	⊗	⊗	
	GeneQ						⊗	⊗	⊗	

### BIO-RAD

Thermal Cyclers	C1000 Touch	⊗	⊗							⊗
	Genecycler						⊗	⊗	⊗	
	iCycler™, MyCycler™			⊗	⊗		⊗	⊗	⊗	
	S1000	⊗	⊗							⊗
	T100			⊗	⊗		⊗	⊗	⊗	⊗
	Mini Gradient						⊗	⊗	⊗	⊗
	PTC100™ (96 well block only)	⊗	⊗	⊗	⊗		⊗	⊗	⊗	⊗
	DNA Engine™, DNA Dyad™	⊗	⊗	⊗	⊗		⊗	⊗	⊗	⊗

qPCR Cyclers	CFX Opus, CFX96 Touch/Touch Deep Well, CFX connect	⊗	⊗							
	iCycler™ IQ, IQ™ 4, IQ™ 5, MyiQ™			⊗	⊗		⊗	⊗	⊗	
	Chromo4™	⊗	⊗				⊗	⊗		
	MiniOpticon									
	Opticon™, Opticon2™, DNA Engine	⊗	⊗							

### Corbett Research

Thermal Cyclers	(Qiagen) Palm Cycler	⊗	⊗							⊗
qPCR Cyclers	Rotor-Gene series									

### EPPENDORF

Thermal Cyclers	MasterCycler® Pro, Pro S	⊗	⊗	⊗	⊗		⊗	⊗	⊗	
	MasterCycler® nexus, gradient, eco, gradient eco	⊗	⊗	⊗	⊗		⊗	⊗	⊗	
	MasterCycler® nexus X2, GX2, GX2e, X2e						⊗	⊗	⊗	
	MasterCycler® nexus SX1, GSX1	⊗	⊗	⊗	⊗		⊗	⊗	⊗	
qPCR Cyclers	Mastercycler™ ep realplex	⊗	⊗	⊗	⊗		⊗	⊗	⊗	

### PEQLAB (VWR)

Thermal Cyclers	peqSTAR 96	⊗	⊗				⊗	⊗	⊗	⊗
	peqSTAR 2X						⊗	⊗	⊗	

### ROCHE

	LC96/LC480					⊗				
	Nano									⊗







9

10

11

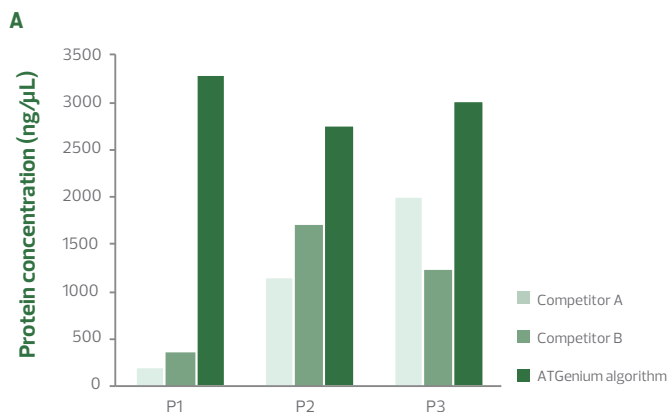
12

# GENE SYNTHESIS

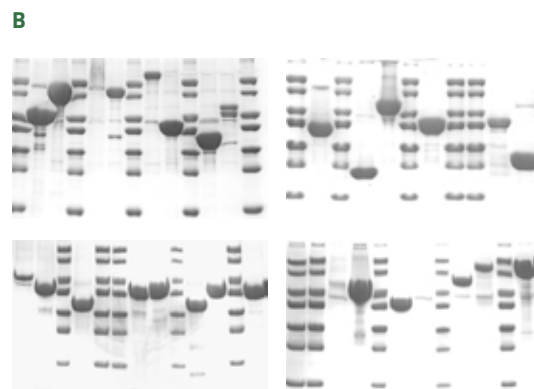
Gene synthesis has become an important tool in many fields of recombinant DNA technology. Whether you have limited cloning experience or simply want to save time, NZYTech's Gene Synthesis service helps you to quickly move your ideas from the planning stage to the laboratory. A highly motivated team is eager to provide you with a very efficient service affording considerable savings of time and money. Either if you select the custom or High-Throughput (HTP) Gene Synthesis service you will be offered a premium service that will deliver high quality and downstream efficacy.



NZYTech's scientists have also developed a highly robust gene design optimization software - **ATGenium** codon optimization algorithm - to maximize protein expression. Our proprietary algorithm comprehensively optimizes critical factors in transcription, translation and co-translational protein folding to deliver highest levels of expression in any host system. This service is offered at no extra cost for all gene synthesis services if required.



**A.** Levels of protein expression of three different eukaryotic proteins in *Escherichia coli* BL21 (DE3). The genes encoding these proteins were optimized by three algorithms for codons optimization, by two different competitors (light green) and using the ATGenium codon optimization algorithm developed by NZYTech (dark green).



**B.** High-throughput recombinant protein expression of CAZymes (Carbohydrate Active Zymes). Genes encoding these proteins were optimized using ATGenium, cloned into pHTPI expression vector and overexpressed in *E. coli* BL21 (DE3). High protein expression yields were obtained.

## CUSTOM GENE SYNTHESIS

NZYTech's Custom Gene Synthesis service provides in vitro chemical synthesis, cloning and 100% sequence verification of any desired DNA sequence.

Sub-cloning into NZYTech's pTHP vectors is available upon request.

### Gene Synthesis

Gene Synthesis (DNA fragments <500 bp)	GS00307
Gene Synthesis (DNA fragments 501-1000 bp)	GS00308
Gene Synthesis (DNA fragments 1001-2000 bp)	GS00309
Gene Synthesis (DNA fragments 2001-5000 bp)	GS00310
Gene Synthesis (DNA fragments > than 5001 bp)	GS00311

Flexible, custom gene design  
Free codon optimization – ATGenium  
Sequences 100% verified

### Gene sub-cloning

Gene sub-cloning into pHTP vectors	MS00209
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## HIGH-THROUGHPUT GENE SYNTHESIS

NZYTech's R&D team has developed a High-Throughput (HTP) Gene Synthesis platform to efficiently generate hundreds to thousands of synthetic genes. We offer a high quality HTP Gene Synthesis service for DNA fragments below 4 kb. HTP Gene Synthesis will allow to tackle difficult research projects such as: determination of structure-function relationships in different proteins, creation of novel antibody libraries, screening of gene variant libraries or optimization of protein function and expression. Our codon optimization technology - ATGenium algorithm - allows obtaining the highest possible levels of gene expression in different expressions hosts while retaining high levels of protein solubility.

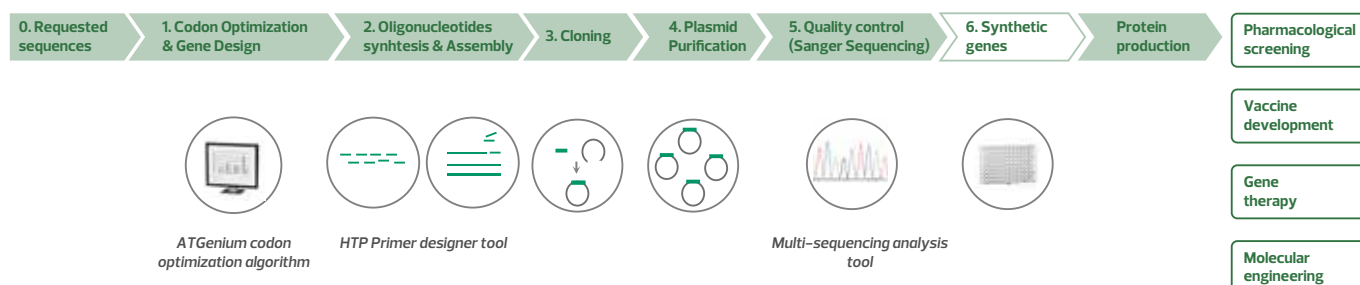
### HTP Gene Synthesis (> 48 genes)

HTP Gene Synthesis (> 48 genes) (DNA fragments <500 bp)	HS00505
HTP Gene Synthesis (> 48 genes) (DNA fragments 501-1000 bp)	HS00506
HTP Gene Synthesis (> 48 genes) (DNA fragments 1001-5000 bp)	HS00507
HTP Gene Synthesis (> 48 genes) (DNA fragments > than 5001 bp)	HS00508

### HTP Gene Sub-cloning (> 48 genes)

HTP Gene Cloning (> 48 genes) (into pHTP vectors)	HS00203
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– Flexible gene design process  
– Free codon optimization  
– 100% sequence accuracy guaranteed  
– Sub-cloning into any *E. coli* expression vector from our pHTP library



## GENE FRAGMENTS

### Gene Fragments

300-400 bp (price per fragment)	GF00108
401-500 bp (price per fragment)	GF00109
501-750 bp (price per fragment)	GF00110
751-1000 bp (price per fragment)	GF00111
1001-1250 bp (price per fragment)	GF00112
1251-1500 bp (price per fragment)	GF00113
1501-1800 bp (price per fragment)	GF00114

## PEPTIDES

### PEPTIDE SYNTHESIS

NZYTech offers a high-quality peptide synthesis service designed to ensure our customer's complete satisfaction. Every peptide is subjected to a variety of performance control steps to guarantee the highest quality. Peptides may be provided crude, desalted, or with 75% to 98% purity. In addition, NZYTech peptides can be subjected to a variety of chemical modifications upon request.

Lyophilized peptide delivered with the required sequence, purity and quantity  
Several modifications available: phosphorylation, methylation, acetylation, amidation, fluorescence/dye labeling  
Additional discounts for large-scale peptide synthesis orders





# GLYCOBIOLOGY



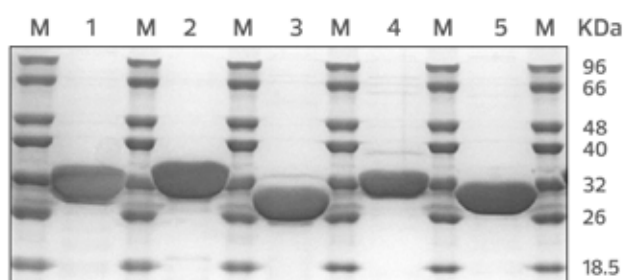
# NZYTECH CAZYMES: HIGHLY PURE, STABLE AND OPTIMIZED RESEARCH TOOLS FOR SCIENCE AND INDUSTRY

## 1. A LARGE AND DIVERSE PORTFOLIO

NZYTech R&D department, individually or in collaboration with the CAZy community, is building a large and diverse portfolio to foster science and industrial progress. All proteins have a recombinant origin and are produced and purified from *Pichia pastoris* or *Escherichia coli*. In this catalogue you will find more than 1000 CAZymes, covering >200 CAZy families ([www.cazy.com](http://www.cazy.com)) and >150 EC number activities ([www.enzyme.expasy.org](http://www.enzyme.expasy.org)).

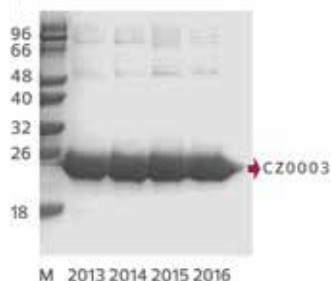
## 2. ULTRA-PURE FOR A VARIETY OF APPLICATIONS

NZYTech CAzymes are purified using a comprehensive list of chromatography protocols to achieve the highest level of protein purity. As an example, the figure below provides an SDS-PAGE analysis of Glycobiology CZ0604, CZ0580, CZ0621, CZ0633 and CZ0641. Purification level of all Glycobiology listed in this catalogue may be found at NZYTech website ([www.nzytech.com](http://www.nzytech.com)).



## 3. REDUCED BATCH-TO-BATCH VARIATION AND LONG STORAGE STABILITY

NZYTech devotes significant efforts to minimize batch to batch variation and improve protein stability. In the Figure below 4 batches of Xylanase 11A from *Clostridium thermocellum* (CZ0003), produced in 2013, 2014, 2015 and 2016, were tested in March 2018 for molecular integrity and protein purity. The data reveals that there is minimal variation in molecular integrity up to 5 years after production (Panel B). Thus, it is important to follow the storage guidelines provided.



## 4. NZYTECH CAZYMES ARE THOROUGHLY CHARACTERIZED AND THEIR BIOCHEMICAL PROPERTIES DESCRIBED IN LITERATURE

Although NZYTech provides CAZymes as highly pure recombinant proteins and not functionally assessed, the majority of NZYTech CAZymes have been thoroughly characterized and their enzymatic properties is described in the literature. The reference of the paper describing such properties is provided in the product manual which allows you to select the one most suited for your experiments.



## Glycoside Hydrolases

ACETYL GALACTOSAMINIDASES	(5 entries)	PHOSPHO- $\beta$ -GLUCOSIDASES	(16 entries)
ACETYLGLUCOSAMINIDASES	(19 entries)	GLUCURONIDASES	(14 entries)
AGARASES	(17 entries)	GLUCURONOXYLANASES	(4 entries)
AMYLASES	(15 entries)	HEXOSAMINIDASES	(13 entries)
AMYLOMALTASES	(7 entries)	HYALURONIDASES	(2 entries)
ARABINANASES	(8 entries)	INULASES	(2 entries)
ARABINOFURANOSIDASES	(35 entries)	LAMINARINASES	(16 entries)
ARABINOPYRANOSIDASES	(1 entries)	LEVANASES	(4 entries)
ARABINOXYLANASES	(2 entries)	LEVANSUCRASES	(3 entries)
CARRAGEENASES	(2 entries)	LICHENASES	(11 entries)
CELLOBIOHYDROLASES	(10 entries)	LYSOZYMES	(4 entries)
CELLODEXTRINASES	(2 entries)	$\alpha$ -MANNANASES	(3 entries)
CELLULASES	(79 entries)	$\beta$ -MANNANASES	(25 entries)
CHITINASES	(7 entries)	$\alpha$ -MANNOSIDASES	(22 entries)
CHITOSANASES	(3 entries)	$\beta$ -MANNOSIDASES	(6 entries)
DEXTRANASES	(4 entries)	MANNOSYLGLUCOSE PHOSPHORYLASES	(2 entries)
FRUCTANASES	(3 entries)	OLIGOSACCHARIDE REDUCING -END XYLANASES	(2 entries)
FRUCTOFURANOSIDASES	(4 entries)	PEPTIDOGLYCAN LYTIC EXOTRANSGLYCOSYLASES	(4 entries)
FRUCTANASES	(3 entries)	POLYGALACTURONASES	(7 entries)
FRUCTOFURANOSIDASES	(4 entries)	PORPHYRANASES	(4 entries)
FUCOSIDASES	(16 entries)	PULLULANASES	(3 entries)
GALACTANASES	(6 entries)	RHAMNOGALACTURONASES	(16 entries)
$\alpha$ -GALACTOSIDASES	(15 entries)	SIALIDASES	(6 entries)
$\beta$ -GALACTOSIDASES	(21 entries)	TREHALASES	(13 entries)
PHOSPHO- $\beta$ -GALACTOSIDASES	(4 entries)	$\Delta$ -4,5-UNSATURATED $\beta$ -GLUCURONYL HYDROLASES	(7 entries)
$\beta$ -D-GALACTOSYL-1,4-L-RHAM- NOSE PHOSPHORYLASES	(2 entries)	XYLANASES	(43 entries)
GALACTOSYL-N-ACETHYHEXOSA- MINE PHOSPHORYLASES	(2 entries)	XYLOGLUCANASES	(7 entries)
GALACTURONIDASES	(6 entries)	XYLOSIDASES	(17 entries)
GLUCANSUCRASES	(5 entries)	OTHER ACTIVITIES	(26 entries)
GLUCOSAMINIDASES	(3 entries)		
$\alpha$ -GLUCOSIDASES	(13 entries)		
$\beta$ -GLUCOSIDASES	(25 entries)		

## Carbohydrate esterases

ACETYL XYLAN ESTERASES	(18 entries)
ACETYLGLUCOSAMINE DEACETYLASES	(8 entries)
DIACETYLCHITOBIOSE DEACETYLASES	(1 entries)
FERULOYL ESTERASES	(96 entries)
GLUCURONYL ESTERASES	(7 entries)
PECTIN ACETYL ESTERASES	(4 entries)
PECTIN METHYLESTERASES	(4 entries)

## Polysaccharide lyases

ALGINATE LYASES	(14 entries)
CHONDROITIN LYASES	(4 entries)
HEPARIN LYASES	(6 entries)
HYALURONATE LYASES	(1 entries)
OLIGOGALACTURONATE LYASES	(2 entries)
PECTATE LYASES	(28 entries)
PECTIN LYASES	(2 entries)
POLY- $\alpha$ -GULURONATE LYASES	(2 entries)
RHAMNOGALACTURONAN LYASES	(8 entries)
ULVAN LYASES	(8 entries)
XANTHAN LYASES	(1 entries)
RHAMNOGLUCURONATE LYASES	(1 entries)

## Auxiliar activities

LACCASES	(3 entries)
LYTIC POLYSACCHARIDE MONOOXYGENASES	(5 entries)

## Carbohydrate-binding modules

CBMs	(103 entries)
GFP-CBM	(57 entries)
ZZ-CBM	(2 entries)

## Mini-cellulosomes & other enzymes

MINI-CELLULOSOMES	(3 entries)
CELLOBIOSE DEHYDROGENASE	(1 entries)
XYLOSE ISOMERASE	(1 entries)



**analytical test kits**

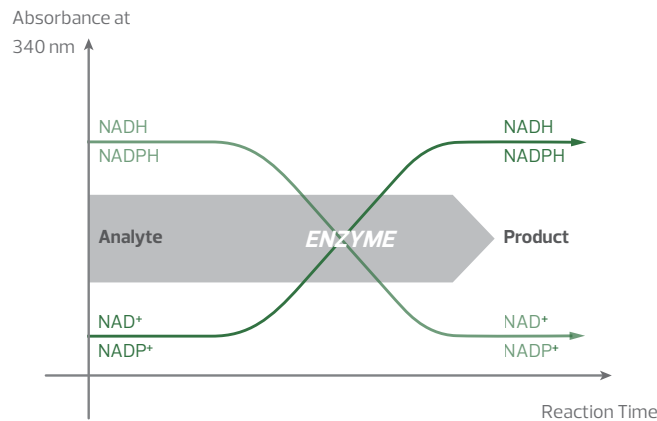
**ANALYTICAL PRODUCTS**

# PRINCIPLES & FEATURES

## UV TESTS

NZYTEch test kits are based on enzymatic reactions and performed using spectrophotometric methods.

The principle of the enzymatic tests is based on the NAD(P)<sup>+</sup>/NAD(P)H system and uses highly pure enzymes engineered to display a premium performance. The enzymes used in these analytical kits produce or consume NAD(P)H, which strongly absorbs the UV radiation at 340 nm (extinction coefficient of 6300 M<sup>-1</sup>cm<sup>-1</sup>).



## COLORIMETRIC TESTS

The principle of the enzymatic tests based on a chromogenic reaction is the formation of a coloured compound, which absorbs at the visible region of the spectrum. The coloured compound results from the interaction between the product of a first enzymatic reaction and a chromogenic compound. In this case, the concentration of the analyte must be determined by using a standard curve.

- Endpoint analysis
- Easy to use, simple protocols
- Rapid analysis
- Accuracy and precision
- Safe to the operator
- Standards included



## REQUIRED MATERIAL

- Spectrophotometer
- Micropipettes set with disposable plastic tips to accurately dispense volumes from 20 µL to 1000 µL
- Cuvettes
- Basic filtering or other simple sample treatment device

# APPLICATIONS

Nome	Kit size	Range	Detection Limit	Food Industry	Feed Industry	Wine Industry	Fermentation Industry	Dairy Industry	Biofuel	Catalogue No
Acetaldehyde, UV Method	50 tests	0.25-200 mg/L	0.176 mg/L			✓	✓	✓		AK00051
Acetic Acid, UV Method	53 tests	0.15-200 mg/L	0.14 mg/L	✓	✓	✓	✓	✓	✓	AK00081
Ammonia, UV Method	96 tests	10-70 mg/L	0.07 mg/L	✓	✓	✓	✓			AK00091
L-Arginine/Urea/Ammonia, UV Method	50 tests each	50-400 mg/L L-arginine 20-140 mg/L urea 10-70 mg/L ammonia	0.37 mg/L L-arginine 0.13 mg/L urea 0.07 mg/L ammonia			✓	✓			AK00171
Ethanol, UV Method	60 tests	0.12-120 mg/L	0.093 mg/L	✓		✓	✓	✓	✓	AK00061
D-Fructose/D-Glucose, UV Method	110 tests of each*	2-800 mg/L	0.66 mg/L	✓	✓	✓	✓	✓	✓	AK00041
D-Glucose HK, UV Method	110 tests	2-800 mg/L	0.66 mg/L	✓		✓	✓	✓		AK00031
D-Glucose (God-POD), Colorimetric Method	660 tests	100-1000 mg/L	100 mg/L	✓			✓	✓		AK00161
L-Glutamine/Ammonia, UV Method	50 tests of each	10-400 mg/L L-glutamine 10-70 mg/L ammonia	0.54 mg/L L-glutamine 0.07 mg/L ammonia	✓			✓			AK00111
L-Lactic Acid, UV Method	50 tests of each	0.30-300 mg/L	0.30 mg/L	✓	✓	✓	✓	✓	✓	AK00131
D-/L-Lactic Acid, UV Method	50 tests of each	0.30-300 mg/L	0.30 mg/L	✓	✓	✓	✓	✓	✓	AK00141
D-Malic Acid, UV Method	100 tests	0.25-400 mg/L	0.26 mg/L	✓		✓				AK00021
L-Malic Acid, UV Method	58 tests	0.25-300 mg/L	0.25 mg/L	✓		✓	✓			AK00011
L-Malic Acid, Colorimetric Method	5x10 tests	8-800 mg/L	8 mg/L	✓		✓	✓			AK00191
Sucrose/D-Fructose/D-Glucose, UV Method	100 tests of each	20-800 mg/L	1.40 mg/L	✓	✓	✓	✓	✓	✓	AK00201
Sulfite, UV Method	30 tests	0.25-300 mg/L	0.25 mg/L	✓		✓	✓			AK00071
Urea/Ammonia, UV Method	50 tests each	1.5-140 mg/L urea 10-70 mg/L ammonia	0.13 mg/L urea 0.07 mg/L ammonia	✓	✓	✓	✓	✓		AK00101

**analytical enzymes**







# ANALYTICAL PRODUCTS



# ANALYTICAL ENZYMES

Enzyme	EC	Catalogue No	Pack size
Acetyl-CoA synthetase	6.2.1.1	AE00081	250 U
D-Alanine aminotransferase	2.6.1.21	AE00141	2500 U
Alcohol dehydrogenase	1.1.1.1	AE00131	1000 U
Aldehyde reductase YqhD	1.1.1.21	AE00021	2.0 mg
Arginase	3.5.3.1	AE00211	1950 U
Aspartate aminotransferase	2.6.1.1	AE00061	5000 U
Citrate synthase	2.3.3.1	AE00041	2500 U
Diaphorase	1.8.1.4	AE00231	1000 U
Glucokinase	2.7.1.2	AE00171	1400 U
Glucose-6-phosphate dehydrogenase , NADP <sup>+</sup> dependent	1.1.1.49	AE00111	5000 U
Glucose-6-phosphate dehydrogenase , NAD <sup>+</sup> dependent	1.1.1.49	AE00161	5000 U
Glucose-6-phosphate isomerase	5.3.1.9	AE00101	5000 U
Glutamate dehydrogenase	1.4.1.4	AE00051	3300 U
Glutaminase	3.5.1.2	AE00071	2500 U
Glutathione reductase	1.8.1.7	AE00221	500 U
Invertase	3.2.1.26	AE00241	100 kU
Lactaldehyde dehydrogenase	1.2.1.22	AE00031	4.0 mg
D-Lactate dehydrogenase	1.1.1.28	AE00121	22 kU
D-Malate dehydrogenase	1.1.1.83	AE00151	200 U
L-Malate dehydrogenase	1.1.1.37	AE00091	50 kU
NADH peroxidase	1.11.1.1	AE00201	500 U
Sulfite oxidase molybdenum centre domain	1.8.3.1	AE00011	2.25 U
Uronate dehydrogenase	1.1.1.203	AE00191	24 kU

# TERMS & CONDITIONS



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