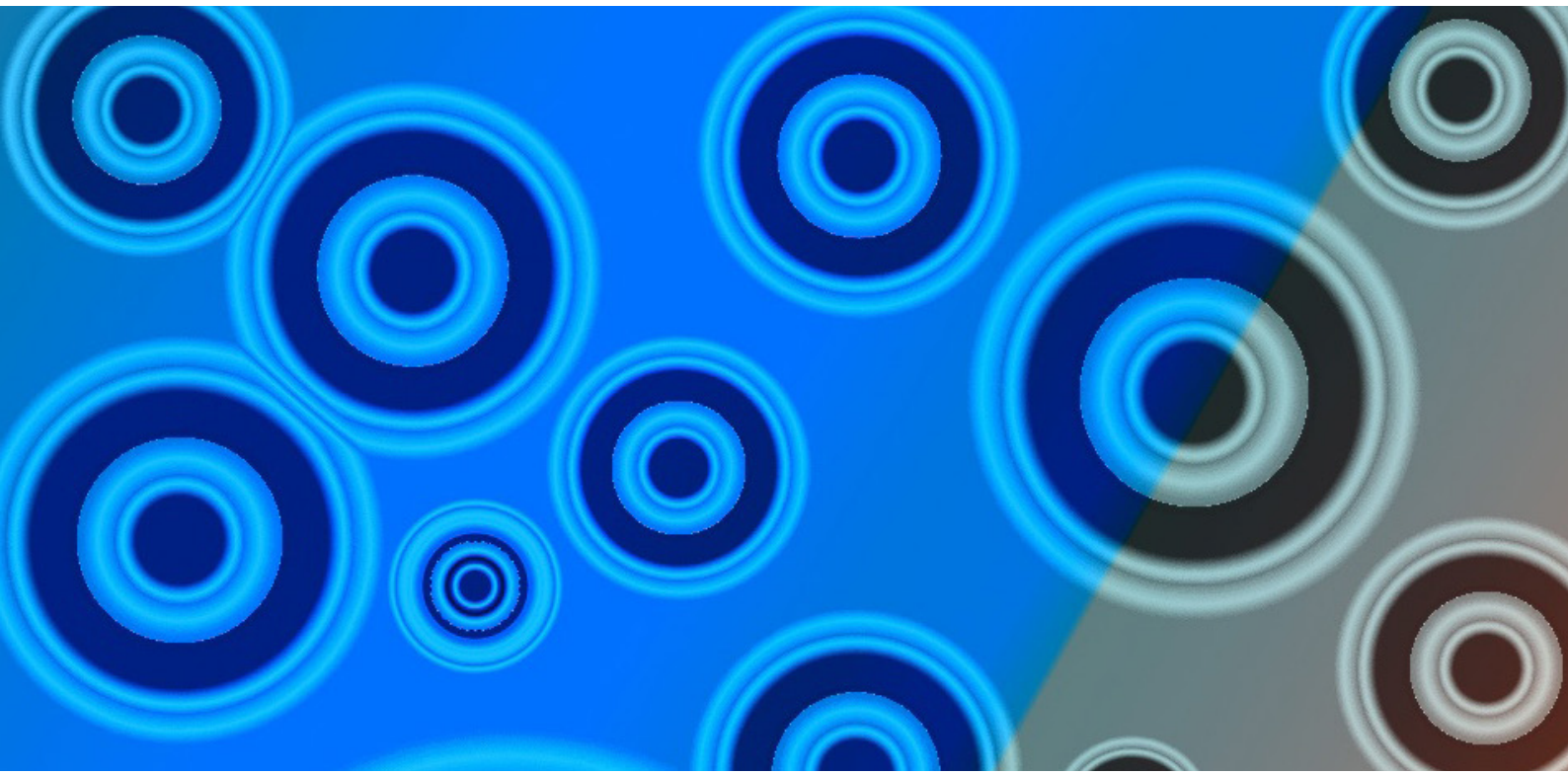
BioNordika
YOUR SCIENTIFIC SUPPLIER

FROM GENE TO PROTEIN

Cloning • Transformation • Expression • Purification • Verification



The information in this brochure is provided in good faith based on BioNordika's knowledge as of the publication date. This brochure is only a guide and may not be up-to-date. For current information please contact BioNordika.

Research Use Only
The products in this catalog are inteded for research purposes only. The products are not inteded to be used for therapeutic or diagnostic purposes in humans or animals

CONTENT

Traditional cloning

If you are a fan of building your cloning experiments traditionally piece by piece, we can help you by offering all the pieces in one order! From BioNordika's portfolio you will find restriction enzymes, vectors, modifying enzymes and ligases from the grand old lady of the cloning business, New England Biolabs (NEB).

Restriction enzyme (RE) digestion

Although NEB offers a wide variety of products, their knowledge in cloning is unbeatable with restriction enzyme (RE) experience starting from the mid-1970s. You can choose REs unique to both the insert and the vector, since NEB's selection covers around 285 different REs, which is currently the largest selection commercially available.

- Avoid tiresome buffer changes
  Over 210 NEB REs work in the same buffer called CutSmart, which you can also use with many modifying enzymes
- Choose the way you work
  Over 190 REs are able to digest DNA both in 5-15 minutes or overnight. Look for the tag "TimeSaver"!
- Select superior performance when possible
  NEB has engineered popular REs to enable superior performance (buffer compatibility and no star activity) compared to their native counterparts. We offer these High Fidelity (HF) enzymes with the same price as native ones!

Product no	Product description	Product no	Product description	Product no	Product description
R3552S/L	AgeI-HF	R3505S/L	EagI-HF	R3140S/L	PstI-HF
R3566S/L	ApoI-HF	R3101S/L	EcoRI-HF	R3150S/L	PvuI-HF
R3136S/L	BamHI-HF	R3195S/L	EcoRV-HF	R3151S/L	PvuII-HF
R3539S/L	BbsI-HF	R3104S/L	HindIII-HF	R3156S/L	SacI-HF
R3160S/L	BclI-HF	R3142S/L	KpnI-HF	R3138S/L	SalI-HF
R3658S/L	BmtI-HF	R3589S/L	MfeI-HF	R3642S/L	SbfI-HF
R3733S/L	BsaI-HF	R3198S/L	MluI-HF	R3122S/L	ScaI-HF
R3553S/L	BsiWI-HF	R3193S/L	NcoI-HF	R3133S/L	SpeI-HF
R3575S/L	BsrGI-HF	R3131S/L	NheI-HF	R3182S/L	SphI-HF
R3162S/L	BstEII-HF	R3189S/L	NotI-HF	R3132S/L	SspI-HF
R3594S/L	BstZ17L-HF	R3192S/L	NruI-HF	R3500S/L	StyI-HF
R3510S/L	DraIII-HF	R3127S/L	NsiI-HF		

Table 1. High-Fidelity restriction enzyme portfolio. A quick tip! You can always check if there is a HF version available by replacing the first zero of the product number by number three (for instance, R0552S= AgeI, R3552L= AgeI-HF). Easy, right?

Check out the Enzyme Finder tool
If you almost know what you want, I can sort restriction enzymes for you by category, name, restriction sequence or overhang.
Go to: enzymefinder.neb.com/

Check out the Double Digest Finder tool
If you wonder how different restriction enzyme combinations work together, I will fetch the protocols for you and give suggestions.
Go to: nebcloner.neb.com and choose “Digestion”

Check out the NEBcutter tool
If you want to know which restriction enzymes can cut your DNA sequence and find open reading frames (ORFs), I am on it! I will also mark the sites potentially affected by DNA methylation.
Go to: nc2.neb.com/NEBcutter2/

Cloning vectors

When you need a backbone for the DNA insert, from NEB’s selection you will find the most commonly used cloning vectors such as pUC19 and pBR322 as well as phage vectors from bacteriophage M13.

Product no	Product description	Sizes
N3041S/L	pUC19 Vector	50 / 250 µg
N3033S/L	pBR322 Vector	50 / 250 µg

Check out the DNA Sequences & Maps tool
Use me if you need the sequence and restriction maps of NEB’s expression vectors.
Go to: https://www.neb.com/tools-and-resources/interactive-tools/dna-sequences-and-maps-tool

DNA modifying enzymes

When cloning, you need to know who is in control. You can start by arming yourself with different modifying enzymes, many of them working in the same buffer as NEB’s restriction enzymes. Cut Smart!

Blunting and dephosphorylation

You might want to fill in 5’ overhang or remove either 3’ overhang or 5’ overhang if you are blunting your vector. By performing a dephosphorylation of the DNA ends after blunting, you will avoid self-ligation of the vector. You can also reduce background from your cloning vector using different phosphatases before ligation. Save time by using Quick kits from NEB!

Product no	Product description	Sizes
E1201S/L	Quick Blunting Kit	20 / 100 rxns
M0525S/L	Quick CIP	1000 / 5000 units

Poly (dA)-tailing and phosphorylation

If you are avoiding restriction enzymes and performing TA cloning, you may need to add A-overhangs to your fragment.
Exo- Klenow Fragment is lacking both 5' —> 3' and 3' —> 5' exonuclease activity and creates dA-tails.
Phosphorylation is important when you need to introduce 5' phosphate ends needed for ligation to be successful. Check that your insert has phosphorylated ends especially if you are doing PCR cloning!

Product no	Product description	Sizes
M0212S/L	Klenow Fragment (3'→ 5' exo-), 5,000 units/ml	200/1000/1000 units
M0212M	Klenow Fragment (3'→ 5' exo-), 50,000 units/ml	1000 units
M0201S/L	T4 Polynucleotide Kinase	500/2500 units

Ligases

NEB has an extensive portfolio of different ligases to glue you to your lab bench with a smile on your face! All the ligases are recombinant and many are offered as stand-alone, mastermix and kit versions. T4 DNA Ligase is by far the most popular and used also in NEBNext NGS kits from NEB. If in doubt, choose the correct ligase based on the end type of your material, competent cell type and the time you have in your hands.

DNA applications and features	Ligation of sticky ends	Ligation of blunt ends	T/A cloning	Electro-poration	Ligation of sticky ends only	High complexity library cloning	Salt tolerance (>2X that of T4 Ligase)	Thermo-stable	Ligation in 15 min or less
Instant Sticky-end Ligase Master Mix	+++	+	+			++			+++
Blunt/TA Ligase Master Mix	++	+++	+++			++			+++
Electroligase	++	++	++	+++		++			
T4 DNA Ligase	++	++	++	++		+++			+++
Quick Ligation Kit	+++	+++	++			++			+++
T3 DNA Ligase	++	++	+		+++		+++		+++
T7 DNA Ligase	++		+						+++
Taq DNA Ligase	+							+++	+++

Product no	Product description	Sizes
M0202S/L	T4 DNA Ligase	20 000 / 100 000 units

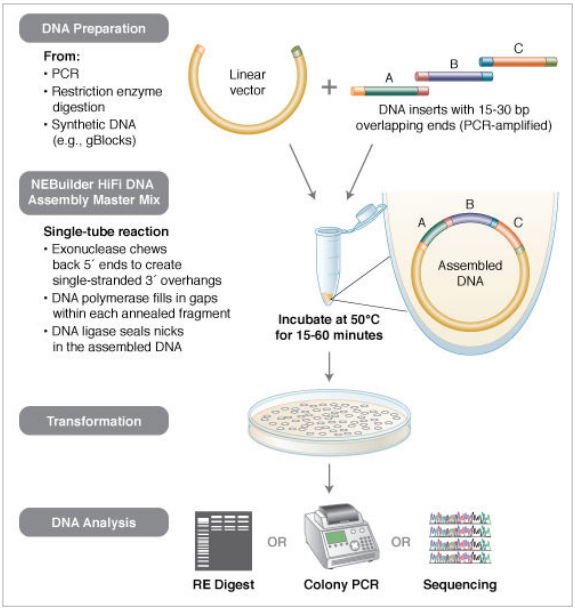
Cloning and mutagenesis kits

Although there is still a huge need for products for traditional cloning, it can be time consuming and require a lot of hands on. BioNordika offers cloning and mutagenesis kit from NEB that can accelerate your cloning.

NEBuilder

Put your overlapping PCR fragments in a magical NEBuilder tube and let it do the error-free and seamless joining. The kit uses our queen among polymerases, namely the Q5 high fidelity polymerase. NEBuilder is available with and without competent cells.

- Save time with simple and fast seamless cloning
- One system for both simple and larger assemblies
- Adaptable for multiple DNA manipulations, including Site-Directed Mutagenesis (SDM)
- Free online tool, NEBuilder, to design primers
- Suitable for fragments with 5' end and 3' end mismatches
- Can also be used for mutagenesis, move gene out to desired vectors, large insertions like GFP, gene fusions



Product no	Product description	Sizes
E2621S/L	NEBuilder HiFi DNA Assembly Master Mix	10 / 50 rxns
E5520S	NEBuilder HiFi DNA Assembly Cloning Kit	10 rxns

NEBuilder®

Check out the NEBuilder tool
I am the one to use when designing primers for your overlapping PCR fragments. I can be used for both NEBuilder and Gibson Assembly.
Go to: nebuilder.neb.com/

NEB Gibson Assembly

Gibson Assembly enables multiple, overlapping DNA fragments to be joined in a single tube isothermal reaction, with no additional sequence added (scar less).

Although we recommend our customers to try the NEBuilder which offers several advantages over Gibson Assembly at same costs, we do offer Gibson too. Some users also make their home brew versions and for that it could be worth choosing Q5 polymerase.

Product no	Product description	Sizes
E2611S/L	Gibson Assembly Master Mix	10 / 50 rxns
E5510S	Gibson cloning kit	10 rxns

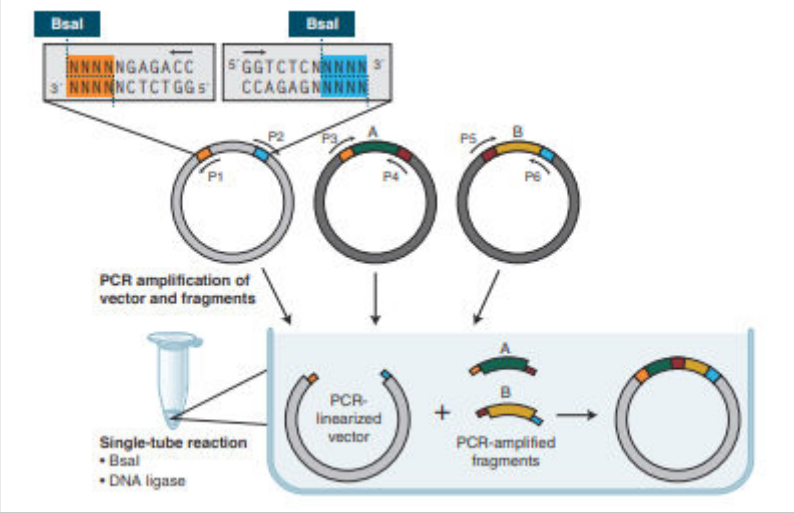
NEB Golden Gate Assembly

The magic does not stop with the NEBuilder. With the use of a single Type IIS restriction enzyme (such as BsaI) and T4 DNA ligase, multiple inserts can be assembled into a vector backbone without any scars. This method, where the digestion and ligation occurs at the same time, is commonly referred to as Golden Gate Assembly.

- Ordered assembly of multiple fragments (20+) in a single reaction
- Can also be used for single inserts
- Fragment size from <100 bp to >15 kb
- Efficient with regions with high GC content and areas of repeat
- Enzymes available separately and as a kit (pGGA destination plasmid with T7/SP6 promoters and BsaI-HFv2 optimized for Golden Gate included)

NEB has become the industry leader in pushing the limits of Golden Gate Assembly. We offer all the products and the information you need to perform complex assemblies. Ask us to see the NEBExpression article where NEB demonstrated a 20+ fragment assembly.

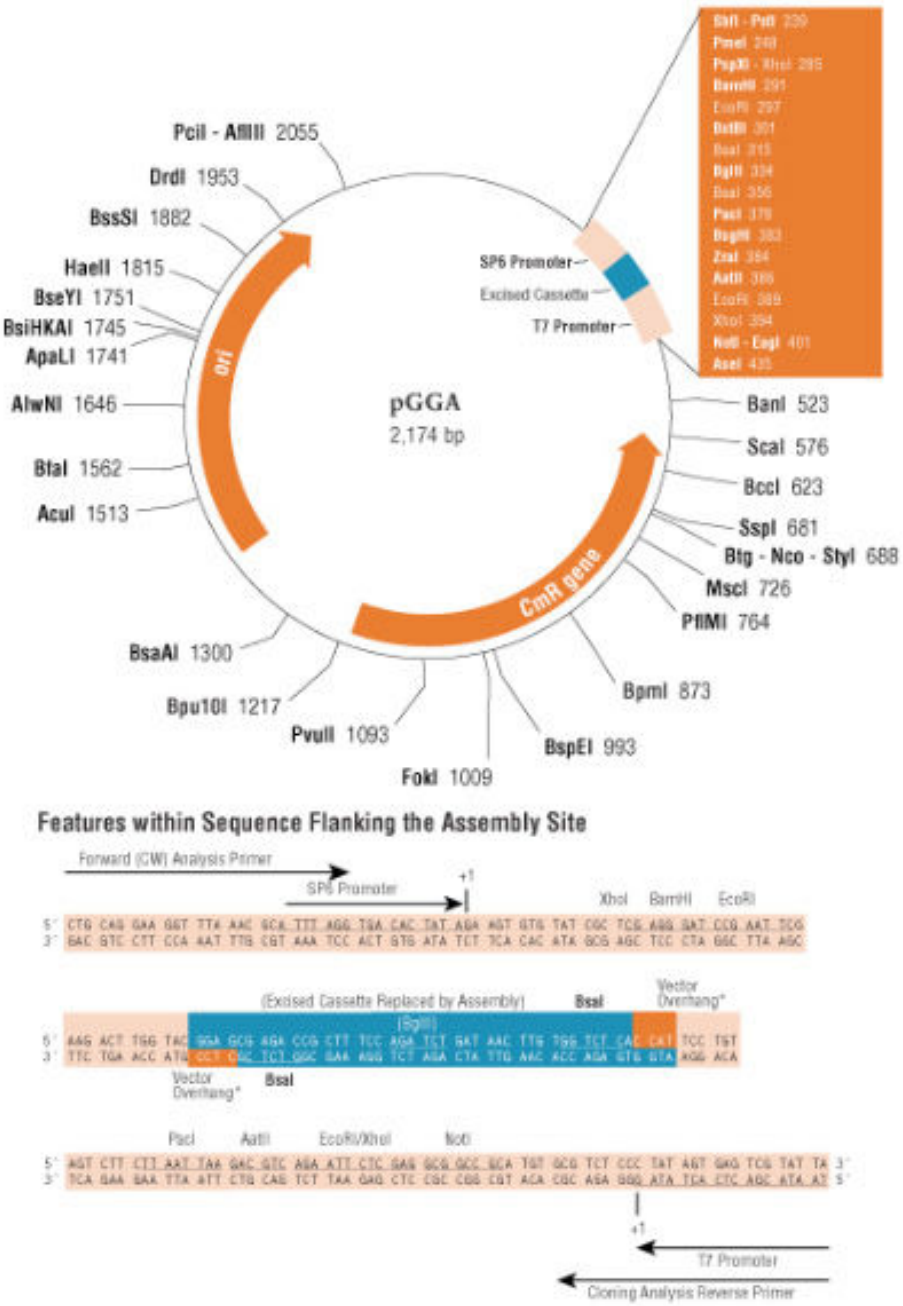
Type IIS restriction enzymes recognize asymmetric DNA sequences and cleave outside of their recognition sequence. Thus, a single Type IIS restriction enzyme can be used to generate DNA fragments with unique overhangs.



In its simplest form, Golden Gate Assembly requires a Type IIS recognition site, in this case BsaI (GGTCYC), added to both ends of a ds DNA fragment. After digestion, these sites are left behind, with each fragment bearing the designed 4-base overhangs that direct the assembly.

NEB Golden Gate Assembly Tool

Check out the NEB Golden Gate Assembly tool
I know how to import sequences from many formats and select fragments for your assembly. I also help you with the primer design.
Go to: neb.com/external-links/neb-golden-gate-assembly-tool



Product no	Product description	Sizes
E1601S/L	NEB® Golden Gate Assembly Kit (BsaI-HF®v2)	20/100 rxn

NEB PCR Cloning Kit

Quick and simple cloning of PCR amplicons, regardless of polymerase used, including blunt end and TA end. If the vector self-ligates, a toxic minigene will be generated resulting in no transformants.

The NEB PCR Cloning Kit has been updated to allow for *in vitro* transcription with SP6 and T7 promoters. It also allows for the cloning of Golden Gate Assembly modules.

Product no	Product description	Sizes
E1203S	NEB PCR Cloning Kit (Without Competent Cells)	20 rxns
E1202S	NEB PCR Cloning Kit	20 rxns

Q5 Site Directed Mutagenesis Kit

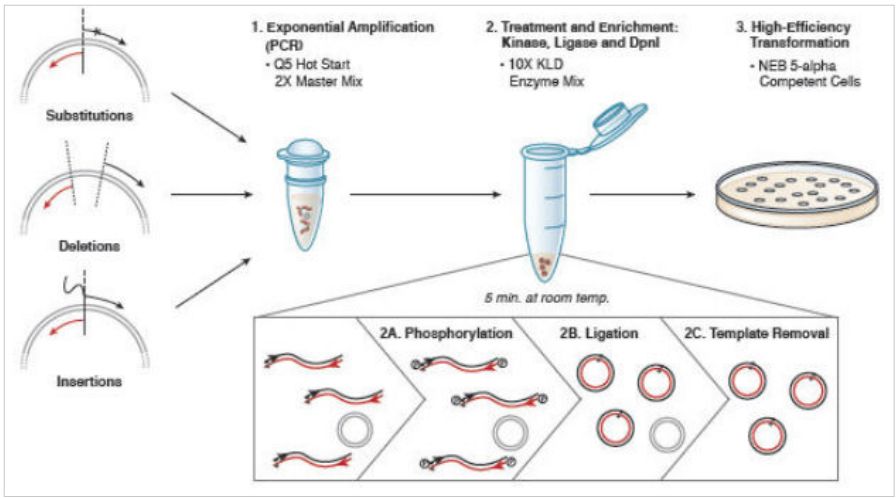
There are several mutagenesis kits on the market. The kit from NEB can be used for insertions up to 100 bp, deletions of any size as well as substitutions. Its broad use, speed and price makes the kit a good choice when working with mutagenesis.

Q5 Site Directed Mutagenesis Kit enables rapid, site specific mutagenesis of double stranded plasmid DNA in less than 2 hours.

- Uses non-overlapping primer design
- Low error rate of Q5 high fidelity DNA polymerase reduces screening time
- Transformation into NEB 5-alpha results in high colony yield
- Free online tool, NEBaseChanger for designing primers

Use if for generating point mutations, truncations, inserting His-tag, Flag tag, restriction sites, protease cleavage etc.

The kit is available with and without competent cells. If you are a fan of home brew methods, you can always buy the components separately and optimize a bit more.



Q5 Site-Directed Mutagenesis Kit Overview. *This kit is deisgned for rapid and efficient invorporation of insertions, delections and substitutions into doublestranded plasmid DNA. The first step is an exponential amplification using standard primers and master mix formulation of Q5 Hot Start High-Fidelity DNA Polymerase. The second step involves incubation with a unique enzyme mix containing a kinase, a ligase and DpnI. Together, these enzymes allow for rapid circulation of the PCR product and removal of the template DNA. The last sted is a high-efficiency transformation into chemicallycompetent cells (provided).*

Product no	Product description	Sizes
E0552S	Q5 Site-Directed Mutagenesis Kit (Without Competent Cells)	10 rxns
E0554S	Q5 Site-Directed Mutagenesis Kit	10 rxns
M0554	KLD Enzyme Mix	25 rxns

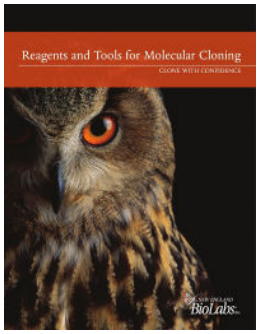
NEBaseChanger™

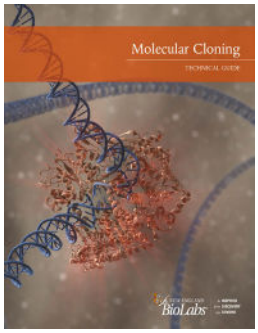
Check out the NEBaseChanger tool
Remember to use me when designing primers for your mutagenesis. There are other tools available, but they might not work for the Q5 SDM
Go to: nebasechanger.neb.com/

NEBcloner®

Check out the NEBcloner tool
If you are still in doubt whether to choose traditional cloning or seamless cloning using a simple kit before transformation, I will guide you! I also include other useful tools you find from this brochure.
Go to: http://nebcloner.neb.com/

If you are new to cloning ask us for a technical guide and reagent guide!





Cloning services and cDNA clones

In case you don't feel like spending time on cut and paste with restriction enzymes or doing any kind of cloning yourself, you can have your gene synthesized. BioNordika offers gene synthesis from Eurogentec.

Gene synthesis

Eurogentec
Experience true partnership

Your gene in only 8- 10 days*	Gene Optimization	The Vector	Trusted Quality	Delivery	Applications
• Up to 50 000 bp • GC rich content • Repeated sequence • Adding or removing restriction sites • Adding or removing specific constraints	• TATA boxes • SD sequence • Terminal signal • GC content • Cryptic splicing sites • Negative CpG islands • Codon usage bias • mRNA secondary structure • Premature PolyA sites • RNA instability motif	• Free cloning into pUC57 (by default) • Your own vector or other vectors such as pcDNA and pET types are available on request	• 100% sequence of your Custom Gene(s) • Size of the inserted fragment • Flanking regions of the chosen vector • DNA quality and quantity	• **Custom Gene(s) >= 2000 bp** delivered within 15-20 days • **4 µg** of lyophilised plasmid DNA carrying your Custom Gene(s) • A printout of the **sequence alignment** confirmed by sequencing • A **plasmid map** to locate the flanking regions and restriction sites • General information and **instructions** to directly use your Custom Gene(s) • Quality Assurance **Certificate**	• Gene variants and SNPs • RNA optimization • Codon optimization • cDNA design • Microarray-ready cDNA • DNA vaccines and vectors

*Option available for genes =< 800 bp without complex sequences. More information on gene@eurogentec.com

Even if you are buying your wild type construct from a gene synthesis company, you still might need to do some additional changes. Products that might come handy are Q5 Site-Directed Mutagenesis Kit and the NEBuilder See pages 10 and 7.

cDNA clones

When you are after a human, mouse or rat protein, you can take a shortcut and order an expression-ready cDNA clone, with or without a tag. Origene's TrueORFs can be flexibly shuttled into multiple destination vectors if you want to express your ORF with a different tag. The key in the PrecisionShuttle™ system is the utilization of two rarecutting restriction endonucleases, Sgf I and Mlu I - simple and low cost!

Product	Main utility	Expression host	Species
TrueClone (untagged)	Protein expression in native form	Mammalian	Human/Mouse/Rat
TrueORF (tagged)	Tagged protein expression	Mammalian Shuttle to 60 vectors	Human/Mouse/Rat

PCR polymerases

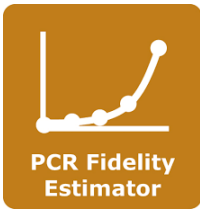
There is no doubt! Q5 is our queen among high fidelity polymerases and she aims for first place in all polymerase marathons. She is fast, yet extremely accurate with low error rates.

Q5 High-Fidelity DNA polymerase

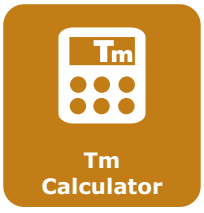
Fidelity is a measure of the accuracy with which a polymerase can replicate a template. A high fidelity polymerase should be able to both insert the correct nucleotide as well as remove incorrect bases. Wouldn't you like like an A to be A, and C to be C when introducing your gene of interest to the plasmid? Fidelity is measured compared to Taq. Phusion, which was the gold standard of high fidelity, is 50 times better than Taq. The queen, Q5, is 280 times better. No wonder people are happy with Q5.

- Up to 280X the fidelity of Taq polymerase
- High speed and robust yields with minimal optimization
- Works on broad range of amplicons from high AT to high GC
- Fast (10- 30 s per kb)
- Hot start versions and master mix available

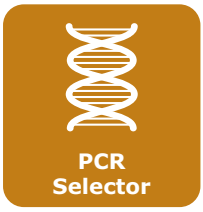
Product no	Product description	Sizes
M0491 S/L	Q5 High-Fidelity DNA Polymerase, 2000 U/ml	100 / 500 units
M0493 S/L	Q5 Hot Start High-Fidelity DNA Polymerase, 2000 U/ml	100 / 500 units



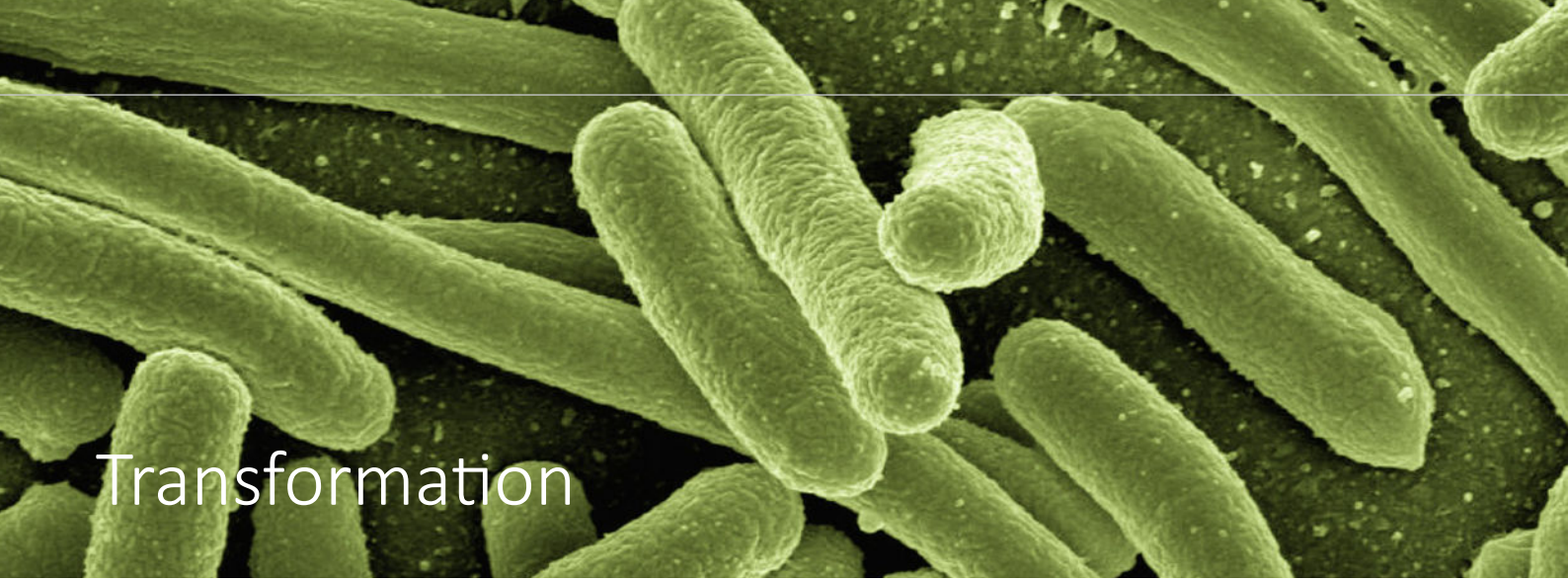
Check out the PCR Fidelity Estimator tool
See the fidelity estimator and compare how many correct copies you will get with Q5 and the polymerase you are using. You might be surprised.
Go to: http://pcrfidelityestimator.neb.com/#!/



Check out the Tm Calculator tool
Find the recommended annealing temperature with the Tm Calculator.
Go to: tmcalculator.neb.com/#!/main



Check out the PCR Selector tool
Just give me some background information and I will give you the best PCR polymerase based on your input. I even work for other PCR applications like RT-PCR, qPCR, isothermal amplifications and NGS.
Go to: pcrselector.neb.com/#!/



Transformation

Competent cloning strains

Many are making the competent cells on their own, but if you want to save your time for other projects and ensure successful transformation and reproducibility, see what we have in our E.coli selection! All NEB cloning strains are K-12 isolates and free of animal products. NEB cloning strains are endonuclease I deficient to avoid your plasmid being chewed up and T1 phage resistant to prevent this airborne cell killer infecting your competent cell. If you need tight expression control, choose a strain with lacIq mutation. If you are using Gateway vectors, you will be happy to know that many NEB competent E.coli do a great job battling with ccdB toxin, but you can also pick up the ccdB sensitive ones for your use. If you want to do traditional blue-white screening, almost all the NEB E.coli strains are lacZ deletion mutants. If your plasmid has long repeat regions (for instance lentiviral vectors), you may want to have recA deficient E.coli strain from NEB. If you are still left pondering the best option, purchase NEB Cloning Competent E. coli sampler, see the table below and ask from BioNordika.

Product no	Product description
C1010S	NEB Cloning Competent E. coli Sampler, 8 tubes

Formats:

- Available in either 50 µl single-use transformation tubes or 200 µl larger transformation tubes you can use for multiple simultaneous reactions
- Can be purchased generally with SOC Outgrowth Medium or NEB 10-beta/Stable Outgrowth Medium and control plasmids

Strain properties	Transformation efficiency (cfu/µg) (1)	Blue/White screening	$lacI^q$	Rapid colony formation	F' vector	RecA-	Drug resistance (2)
NEB Turbo	1-3 x 10^9	Yes	Yes	Yes	Yes	No	nit
NEB 5-alpha	1-3 x 10^{10}	Yes	No	No	No	Yes	none
NEB 5-alpha F' I^q	1-3 x 10^9	Yes	Yes	No	Yes	Yes	tet
NEB 10-beta	1-3 x 10^9	Yes	No	No	No	Yes	str
dam/dcm	1-3 x 10^6	No	No	No	No	No	cam, str, nit
NEB Stable	1-3 x 10^9	Yes	Yes	No	Yes	Yes	tet, str

(1) For high efficiency chemically competent strains. TE is 1- 4 x 1010 cfu/µg for electrocompetent strains and >1 x 1010 cfu/µg for subcloning strains.
(2) nit = nitrofurantoin, tet=tetracycline, cam=chloramphenicol, str=streptomycin, spec=spectinomycin.

Nucleic acid purification

We have yet to meet a researcher who does not prefer concentrated DNA free from contaminants. Nucleic acid purification is an important step of the cloning workflow and there are dozens of kits on the market - yet the kits from BioNordika still offer some advantages. We offer both column based and magnetic bead based technology for nucleic acid purification.

Monarch nucleic acid purification kits

Here is some of the feedback we in BioNordika have received on the Monarch kits:

- Easy protocol and a small and handy protocol card
- Smaller and beautiful packaging
- Low elution volume due to the unique column design
  - Miniprep (30 µl)
  - DNA gel extraction and PCR/DNA Cleanup (6µl)
- Higher yield

Why not consider changing your blue and red boxes in the lab with our bright orange one? Feel free to ask us for a sample.

Product no	Product description	Sizes
T1010S/L	Monarch Plasmid Miniprep Kit	50 / 250 prep
T1020S/L	Monarch DNA Gel Extraction Kit	50 / 250 prep
T1030S/L	Monarch PCR and DNA Cleanup Kit	50 / 250 prep

Colony PCR

Taq polymerases

After the transformation, free your plasmid DNA! You can perform it by either preheating your sample or utilizing the initial heating step of PCR. You can design your primers either to target the insert DNA or the vector DNA flanking the insert depending on what information you want to have: Know specificity, size or orientation of the insert? Or do a quick screening of multiple samples? Whichever primers you might need, you can bet finding them from Eurogentec's broad selection. If you do not find good universal primers, there is always a possibility to do a customized version. Remember to check also the broad selection of purification methods for oligonucleotides!

The polymerase for your colony PCR can be economical workhorse Taq from NEB. However, if you want to save time choose the hot start format and if you have very long fragments, choose LongAmp Taq for amplification up to 30 kb.

Product no	Product description	Sizes
M0495S/L	Hot Start Taq DNA Polymerase	200 / 1000 units
M0323S/L	LongAmp® Taq DNA Polymerase	500 / 2500 units

Gel electrophoresis

One of the most exciting steps during the cloning workflow might be when you run your PCR products on the gels. These minutes can determine your day, your weekend, your mood and perhaps even the day of your friends or spouse. Did it work or did it not? We cannot help with your final results or your mood, but we do have a bunch of products that will come in handy.

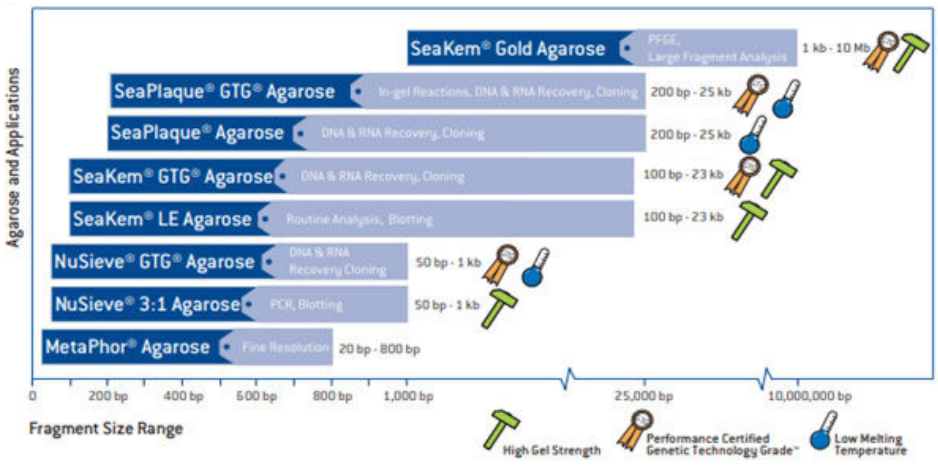
Agaroses

If you are making your own gels, we offer the well known SeaKem® brand from Lonza. Did you know that it was the first agarose for nucleic acid electrophoresis?

Product no	Product description	Sizes
50000	SeaKem LE agarose	125 grams
50001	SeaKem LE agarose	25 grams
50002	SeaKem LE agarose	100 grams
50004	SeaKem LE agarose	500 grams
50005	SeaKem LE agarose	1000 grams

If your cloning has been successful so far, you don't want to mess it up by using bad agarose. Although we doubt that would happen, selecting the best agarose for your application might minimize errors.

Have a look at this agarose selection chart or ask us for the agarose guide from Lonza.



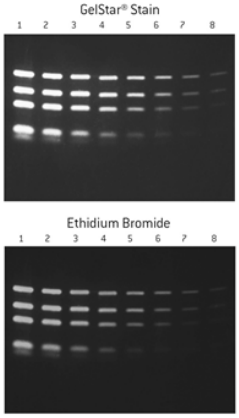
Did you know that BioNordika also has its own brand of agarose? BioNordika Standard Agarose is ideal for identification and recovery of roughly >1000 bp nucleic acid fragments by electrophoresis.

Product no	Product description	Sizes
BN-50004	BioNordika Molecular Biology Grade Agarose	500 grams

Gel stain

There are several ways of destroying an agarose gel and forgetting to put nucleic acid stain is one of them. Without the nucleic stain it will be impossible to visualize and detect the DNA. Luckily, the GelStar™ Stain can be added either prior to casting or to post stain the gels.

- Maximum sensitivity - detect as little as 20 pg of dsDNA or 3 ng of RNA
- Versatile - use for agarose or polyacrylamide gel electrophoresis
- Ideal alternative to silver staining



Product no	Product description	Sizes
50535	GelStar™ Gel Stain	2 × 250 µl

Agarose tablets

Do you want something easier than regular agarose? What about agarose tablets that you resolve in water? Do you want it even easier, choose the 2-in-1 tablet including the stain. Let us use the magic wand on the tablet and bring you a 3-in-1 tablet. The 3-in-1 tablet contains agarose, stain and TAE/TBA buffer that you simply resolve in water.

And the answer is yes! The DNA stain in the tablet is a safer, non-carcinogenic alternative to Ethidium Bromide called Magnite Green DNA stain.

Product no	Product description	Sizes
PAL-E-3in1-TBE	Elite 3-in-1 TBE Agarose Tablets	75 tablets
PAL-E-3in1-TAE	Elite 3-in-1 TAE Agarose Tablets	75 tablets
PAL-E-2in1-100	Elite 2-in-1 Agarose Tablets	100 tablets
PAL-E-AG-100	Elite Agarose Tablets	100 tablets

Reliant® gel system

Would you like your gels to be identical each time or do you simply like the idea of less hands on? Take a look at Reliant gels. The Reliant® Gel System consists of precast agarose minigels for rapid and reproducible resolution of DNA sizes from 8 bp to >10 kb in length. Reliant® Gels are available in a variety of well formats and concentrations with and without ethidium bromide. Reliant® Gels fit most mini and medium electrophoresis chambers.

- Reliable - Made with high quality molecular biology grade SeaKem® or NuSieve® Type Agaroses.
- Easy to use - Remove the lid, peel away the tape, apply tray to the electrophoresis chamber, flood with buffer, and load samples
- Fast - Results can be seen in 30 minutes or less

Mupid® One electrophoresis system

Eurogentec
Experience true partnership

So you have your gels, stains and ladders, but are you still in search for an electrophoresis system? Whether you want to replace your old system or start from scratch, MupidOne can be your pick. This CE-labeled system is not afraid of hot gels (up to 100 °C) poured into it and can handle up to 104 samples at the same time.
If you want, you can connect it to the SmartViewer for real time-tracking or use the SmartIlluminator afterwards to visualize your samples. No need to worry about DNA decay, since both are using blue light instead of UV light. Power supply is included in the unit, so talk about a space saver!

- CE labeled
- Smart power supply
- Heat resistant materials
- Multichannel pipette compatible
- Safety Interlock System
- Gel maker set included

Product no	Product description	Size
MU-0041-	Mupid® One Electrophoresis System Complete	1 apparatus

FlashGel™ system

Lonza

No time to wait for traditional agarose gel runs, let alone make the gels? Lonza's flash gels are here to help! The FlashGel System is a fast way to separate DNA and the best way to watch DNA migration as it happens. You can separate nucleic acids ranging from 50 bp to 4 kb in 2-7 minutes at your bench without UV light.

Depending on the cassette chosen, you can also recover DNA from the second set of wells and get your DNA purified and in a correct fragment size. FlashGel Cassettes contain precast, prestained agarose gels and buffer, so there is no need for gel preparation, buffer addition or gel staining.

Product no	Product description	Size
57067	FlashGel™ System	Dock, Camera and DNA starter kit
57062	FlashGel™ Device Pack	Includes FlashGel™ Dock, FlashGel™ Power Supply and FlashGel™ Camera

Some of the FlashGel products offered for DNA separation and recovery:

Product no	Product description	Size
57023	FlashGel™ DNA Cassettes - 9/pk	1.2%, 12+1 single tier
57029	FlashGel™ DNA Cassettes - 9/pk	1.2%, 16+1 double tier (34-well)
57031	FlashGel™ DNA Cassettes - 9/pk	2.2%, 12+1 single tier
57032	FlashGel™ DNA Cassettes - 9/pk	2.2%, 16+1 double tier (34-well)
57051	FlashGel™ Recovery Cassettes – 9/pk	1.2% agarose, 8+1 double tier (18-well)
57022	FlashGel™ Recovery Cassettes – 9/pk	2.2% agarose, 8+1 double tier (18-well)
57060	FlashGel™ Recovery Buffer	2 × 500 µl
50462	FlashGel™ Loading Dye (5X)	5 × 1 ml vials 5X concentration
50475	FlashGel™ QuantLadder, 100 bp – 1.5 kb	Multi-marker

DNA ladders

Do you have a favorite ladder which you have used for several years? You might even have the order of bands in your mind. Ladders might be a “boring” product to switch, but do remember that you can save a lot of money in the long run by looking at price and amount needed per gel lane.

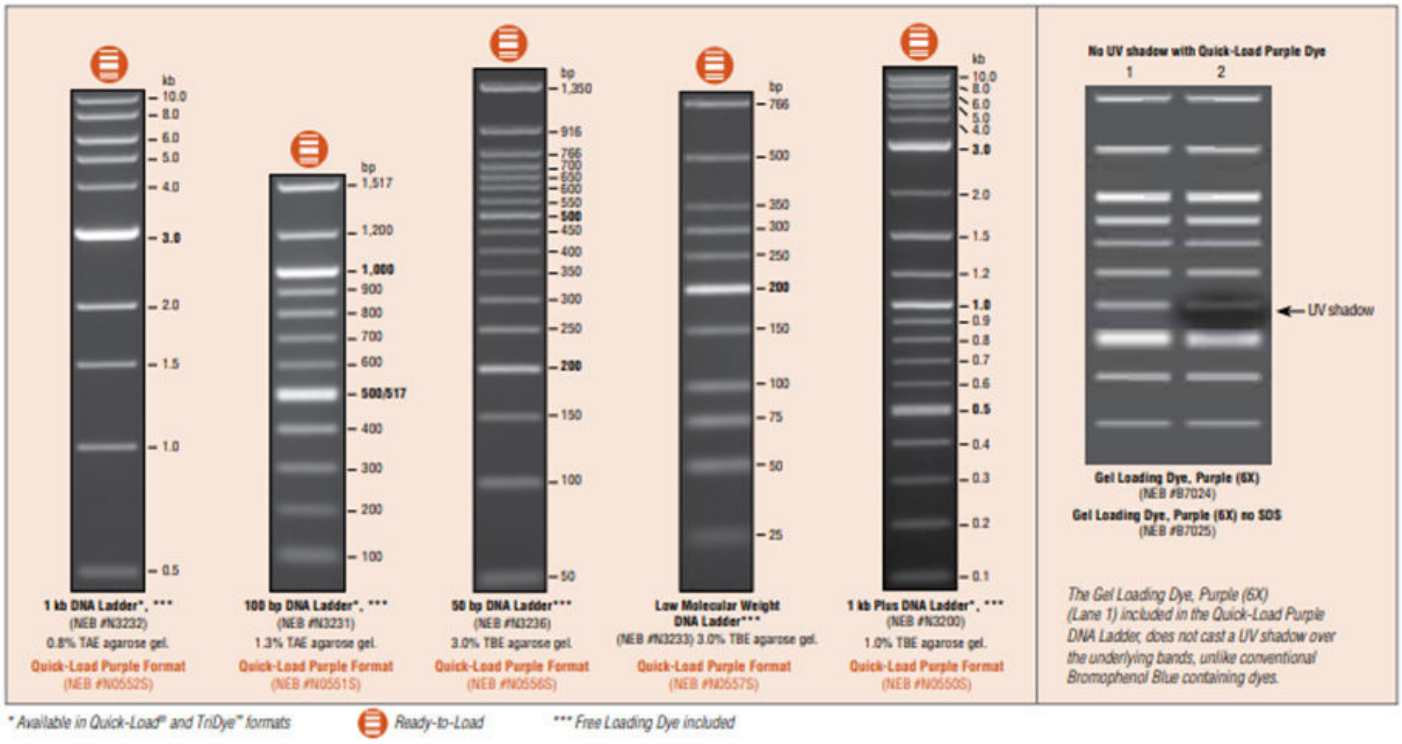
If you want sharp bands without UV shadows for your publications, have a look at the Quick-Load Purple DNA Ladder. Amazingly enough, there are innovations in the world of ladders. Just look at the 1 kb plus ladder which combines the 1kb and 100bp ladder. That is actually 2 in 1.

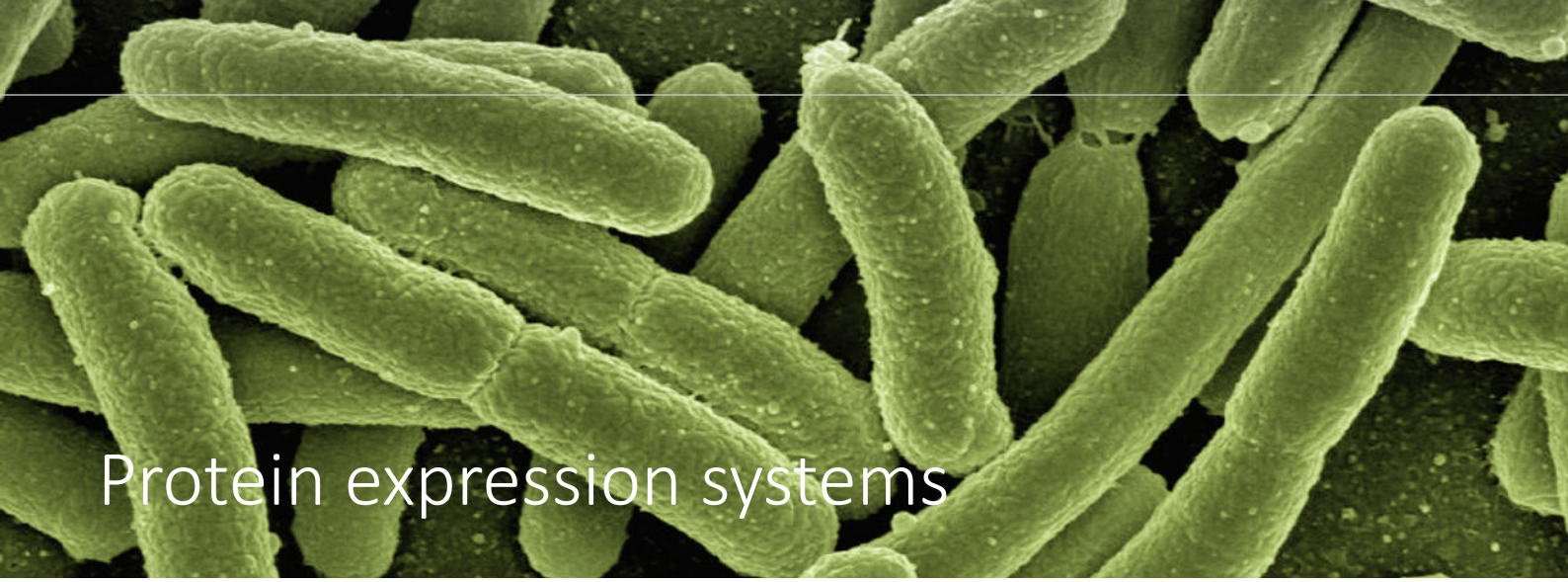
Psst! Use ladders with blue dye for blue light visualization and purple or blue for UV

- Ideal for analysis from 0,1-10 kb
- Ready to load format
- Sharp, high contrast bands
- Utilizes purple gel loading dye
- Includes a vial of purple dye (no SDS) that can be used for you PCR products

If you don’t care about UV shadows or ready to use format and want a budget alternative, go for the standard ladders. Both alternatives are mentioned in the below picture.

The following DNA ladders are now available in Quick-Load Purple format:





Protein expression systems

Expression vectors

If you need an expression vector, NEB can offer it to you. Check out for instance pMAL and IMPACT vectors that are meant for coupled protein expression and affinity purification.

Product no	Product description	Size
E8200S	pMAL™ Protein Fusion and Purification System	1 set
E6901S	IMPACT™ Kit	1 set

Protein expression in bacteria

It has been said that producing proteins in bacteria is relatively easy and inexpensive, and there are several strains to choose from. We offer protein expression strains from New England Biolabs with different characteristics. Find the one best suited for your needs in the table below.

General competent cells for protein expression:

Product no	Product description	Characteristics	Size
C2523H/I	NEB Express Competent *E. coli**	• Versatile non-T7 expression strain • Protease deficient	20 x 0.05 ml 6 x 0.2 ml
C3037I	NEB Express I^q Competent *E. coli*	• Control of IPTG induced expression from P_{lac}, P_{tac} and P_{trc} • Protease deficient	6 x 0.2 ml
C3028J	Shuffle Express I^q Competent *E. coli*	• Enhanced capacity to correctrly fold proteins with multiple disulfide bonds in the cytoplasm • Protease deficient/B strain	12 x 0.05 ml
C2530H	BL21 Competent *E. coli*	• Routine expression for non-T7 vectors • Protease deficient	20 x 0.05 ml
C2529H	NiCo21(DE3) Competent *E. coli*	• Expression and purification of His-tagged proteins • Protease deficient	20 x 0.05 ml

Note: Store competent cells at -80C. Once thawed, do not refreeze. Storage at -20C will result in a signficant decrease in transformation efficiency. Cells lose efficiency whenever they are warmed above -80C, even if they do not thaw.
*NEB Express is the recommended strain for the pMAL Protein Fusion and Purification System.

T7 expression strains:

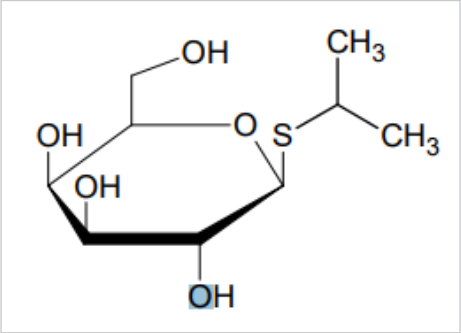
Product no	Product description	Characteristics	Size
C2566H/I	T7 Express Competent *E. coli*	• Most popular T7 expression strain • Protease deficient	20 x 0.05 ml 6 x 0.2 ml
C3010I	T7 Express *lysY* Competent *E. coli*	• T7 expression • Protease deficient • Better reduction of basal expression	6 x 0.2 ml
C3013I	T7 Express *lysY/I^q* Competent *E. coli*	• T7 expression • Protease deficient • Highest level of expression control	6 x 0.2 ml
C3022I	T7 Express Crystal Competent *E. coli*	• T7 expression • Protease deficient • SeMet labeling for protein crystallography	6 x 0.2 ml
C3029J	Shuffle T7 Express Competent *E. coli*	• Enhanced capacity to correctly fold proteins with multiple disulfide bonds in the cytoplasm • T7 expression • Protease deficient/B strain	12 x 0.05 ml
C3030J	Shuffle T7 Express *lysY* Competent *E. coli*	• Enhanced capacity to correctly fold proteins with multiple disulfide bonds in the cytoplasm • Tightly controlled expression of toxic proteins • T7 expression • Protease deficient/B strain	12 x 0.05 ml
C3026J	Shuffle T7 Competent *E. coli*	• Enhanced capacity to correctly fold proteins with multiple disulfide bonds in the cytoplasm • T7 expression/K12 strain	12 x 0.05 ml
C2527H/I	BL21(DE3) Competent *E. coli*	• Routine T7 expression • Protease deficient	20 x 0.05 ml 6 x 0.2 ml
C2528J	Lemo21(DE3) Competent *E. coli*	• Tunable T7 expression for difficult targets • Protease deficient	12 x 0.05 ml

Note: Store competent cells at -80C. Once thawed, do not refreeze. Storage at -20C will result in a signficant decrease in transformation efficiency. Cells lose efficiency whenever they are warmed above -80C, even if they do not thaw.

IPTG

IPTG induces the transcription of the gene coding for ß-galactosidase, an enzyme that promotes lactose utilization, by binding and inhibiting the LacI repressor. It simply allows the cell to make mRNA and protein out of the gene you have inserted.

After a bottle of IPTG is opened it will start absorbing water from the atmosphere and begin to form an amorphous sludge. To ensure a fresh supply for a multi-user laboratory, we offer the 25g IPTG as 5 x 5g bottles (# GEN-S-02122-5x5G) at no extra charge.



Product no	Product description	Sizes
PAL-IPTG-1000-100	1M IPTG Solution	(100 x 1ml; >99.5% purity)
PAL-IPTG-1000-5	1M IPTG Solution	(5 x 1ml; >99.5% purity)
PAL-IPTG-200-100	1M IPTG Solution	(100 x 0.2ml; >99.5% purity)
PAL-IPTG-200-5	1M IPTG Solution	(5 x 0.2ml; >99.5% purity)
GEN-S-02122-25G	µltrapure IPTG	(25g or 5 x 5g; >99% purity)
GEN-S-02122-5G	µltrapure IPTG	(5g; >99% purity)

Protein expression in yeast cells

When prokaryotes are not enough, but higher eukaryotes are too much, you probably have thought about using yeast. NEB offers K. lactis Protein Expression Kit, which is an easy method to express a gene of interest in a yeast. When using the kit you do not need methanol or expensive antibiotics and the protein expression tends to be rapid with high cell density. You can secrete your protein by cloning your gene downstream of the K. lactis α-mating factor secretion domain of pKLAC2. However, you can also choose to produce your protein intracellularly, whatever suits your needs!

Product no	Product description	Size
E1000S	K. *lactis* Protein Expression Kit	1000 ml

Protein expression in insect cells

If you already are using bigger guns and need post-translational modifications, there is a good chance you work with insect cells. Perhaps you use many different ones? Lonza actually allows you to culture all your different insect cell lines in the same media, so no need to order different media for each cell type. Insect-XPRESS has been optimized for SF9, SF21, High Five and Drosophila cells and you can use it both with shaker flasks or as a stationary culture.

Product no	Product description	Sizes
BELN12-730Q	Insect-XPRESSTM Protein-free Insect Cell Medium w/ L-Gln	1000 ml

Protein expression in CHO cells

PowerCHO™ Chemically Defined, Serum-free CHO Media

- Chemically defined PowerCHO™ Media brings new levels of cell proliferation and protein production
- Maintain high viability (>90%) at high cell densities

ProCHO™ Protein-free CHO Media

- Multiple formulas to optimize your protein-free applications including adherent and suspension cells, with high proliferation rates and high protein yield
- Directly convert cultures from adherent with serum to suspension without serum

PowerCHO™ Advance Medium

- Chemically defined, no raw materials of animal origin, serum-free and manufactured to regulatory standards
- Designed for growing and feeding CHO cells in serum-free conditions
- Allow for easier filtration while maintaining cell growth and viability
- Provides protein titers equivalent or better compared to competitors

eCHO™ Basal Medium and Feed

- Serum-free, chemically defined, hydrolysate-free and non-animal origin (NAO)
- GMP grade, also for further manufacturing

Product no	Product description	Sizes
BP12-770Q	PowerCHO™ 1 Chemically Defined Medium	1 L
BELN12-771Q/P10/P20	PowerCHO™ 2 Chemically Defined Medium	1 L / 10 L / 20 L
BEBP12-029Q	ProCHO™ 4 Medium	1 L
BP04-919Q	ProCHO™ 4 Medium, without Phenol Red	1 L
BELN12-766Q/P10/P20	ProCHO™ 5 Medium	1 L / 10 L / 20 L
BE12-927Q	PowerCHO™ Advance Medium	1 L
BE02-044Q	PowerFeed A	1 L
BE02-052Q	PowerFeed A with lipids	1 L
BE02-056Q	CHO Xtreme™ Feed, Chemically Defined	1 L
EBP17-855E	ProHT™ Supplement 100x	100 ml
BEBP12-933Q	eCHO Basal Medium	1 L
BE15-933D	eCHO Basal Medium	10 L (powder)
BEBP12-932Q	eCHO Feed	1 L
BE15-932D	eCHO Feed	10 L (powder)

Cell-free expression system

When you need a very clean system with no endogenous proteases or nucleases, your pick could be PURExpress, a cell-free in vitro transcription/translation kit based on E.coli from NEB. The kit contains only two tubes and by mixing the contents with your template DNA you can do toxic protein production or produce small amounts of your protein to do for instance functional screening of large combinatorial libraries. The whole process will take only 2-4 hours- talk about fast and easy, without compromising the quality!

Product no	Product description	Sizes
E6800S/L	PURExpress® In Vitro Protein Synthesis Kit	10 / 100 rxns

Transfection

Transfection reagents

Polyplus transfection
THE DELIVERY EXPERTS

Struggling with transfection efficiency and post-transfection cell viability? We got you!

PolyPlus transfection® is specialized in developing innovative solutions for in vitro delivery of proteins and nucleic acids such as DNA, RNA and oligonucleotides. Their FectoPRO® Transfection kit is specifically designed for enhanced Transient Gene Expression (TGE) in suspension CHO and HEK-293 cells in various serum-free media, using low DNA amount (< 1 µg/ml of cell culture). FectoPRO®-mediated transfection process is easily scalable from a few ml to several liters of cell culture, ensuring robust reproducible protein production. Increased productivity and low DNA amount requirement make FectoPRO® a cost-effective solution for bioproduction processes.

The advanced transient expression system, FectoCHO® Expression system, consisting in the synergistic association of a novel CHO chemically defined medium, FectoCHO® CD Expression medium and the powerful transfection reagent, FectoPRO®. FectoCHO® CD Expression medium is optimised to facilitate adaptation and cultivation of various strains of CHO cells such as CHO-K1, CHO-S and ExpiCHO™-S : extensive sequential adaptation is not required.

Product no	Product	Transfection Reagent	Expression Booster	Expression Booster
116-001	FectoPRO® Reagent	1 ml	1 ml	-
116-010	FectoPRO® Reagent	10 ml	10 ml	-
116-040	FectoPRO® Reagent	4 x 10 ml	4 x 10 ml	-
716-01L	FectoCHO® CD Medium	-	-	1 L
716-06L	FectoCHO® CD Medium	-	-	6 x 1L
716-01LKIT	FectoCHO® Expression System	1 ml	1 ml	1 L
716-06LKIT	FectoCHO® Expression System	5 x 1 ml	5 x 1 ml	6 x 1 L

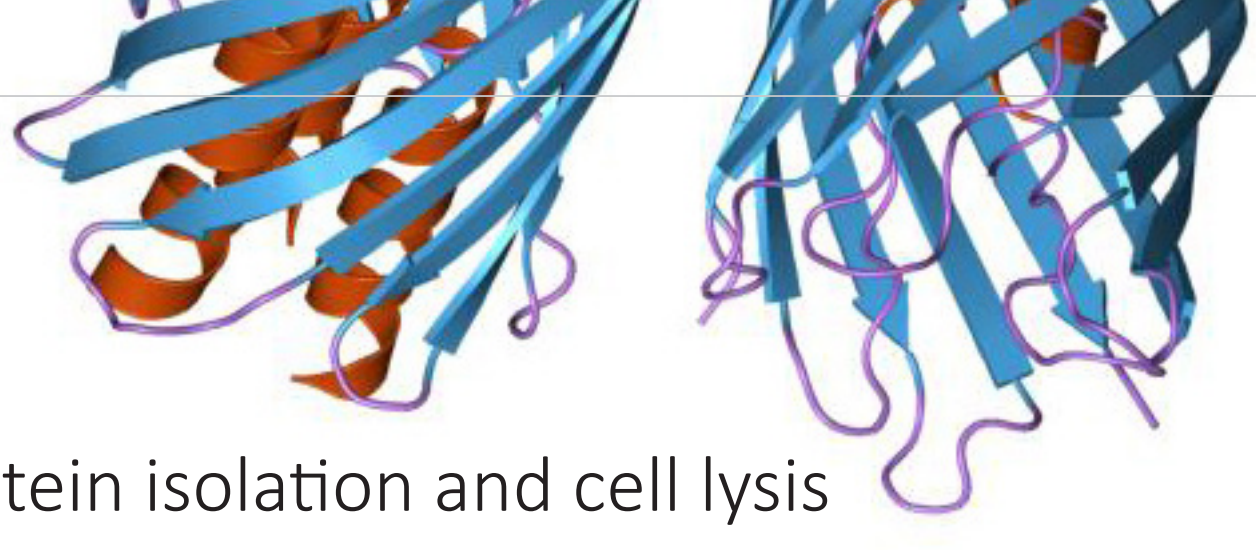
Nucleofection

Lonza

Nucleofection, one of the most efficient transfection methods was developed by Amaxa and is provided today by Lonza. This method introduces DNA, RNA or even protein directly into the nucleus and it can facilitate certain applications like CRISPR for genome editing.

Nucleofector technology is not just another pulser device but it relies on the combination of the instrument, kits and optimized protocols for various cell lines and primary cells- a huge effort Lonza has made to make it easy for you.Transferability has been tested for various cell types, including human T cells, CHO-S and HEK293-S.

Interested in a demo? Contact your local product specialist for more information.



Protein isolation and cell lysis

So now that you have your desired protein expressed in the selected expression system, it's time to start isolating your target proteins from the cells. If target proteins aren't secreted to the culture media, they need to be isolated from the cells. Cell lysis is traditionally done by mechanical disruption of the cell membrane to release the molecules from the cytosol. Sonication is one of the most commonly used methods for cell lysis of bacterial cells. Other common methods for cell lysis are liquid homogenization with high pressure (French Press), repeated freeze-thaw cycles and enzymatic disruption of the cell membrane.

Sonication

diagenode
Innovating Epigenetics Solutions

Efficient disruption and homogenization of animal tissues and cultured cells are required to ensure high yields of purified proteins. Diagenode's Bioruptor® uses state-of-the-art ultrasound technology to efficiently disrupt and homogenize tissues and cultured cells in just one step.

Bioruptor Plus & Protein Extraction Kit

Diagenode's Bioruptor® uses a unique system to uniformly process multiple samples in sealed tubes of 0.5 ml to 50 ml capacity. The built-in cooling system (water cooler and Single Cycle Valve) ensures high precision temperature control resulting in higher quality samples.

Bioruptor® Plus used in combination with the Protein Extraction kit ensures efficient disruption, homogenization and high yields of proteins from tissues. Tubes are already pre-filled with the protein extraction beads which have been designed to enhance the protein extraction process. The protein extraction beads are also available separate.

Product no	Product description
B01020001	Bioruptor® Plus sonication device
C20000020	Protein Extraction kit for Bioruptor® Plus
C20000021	Protein Extraction beads

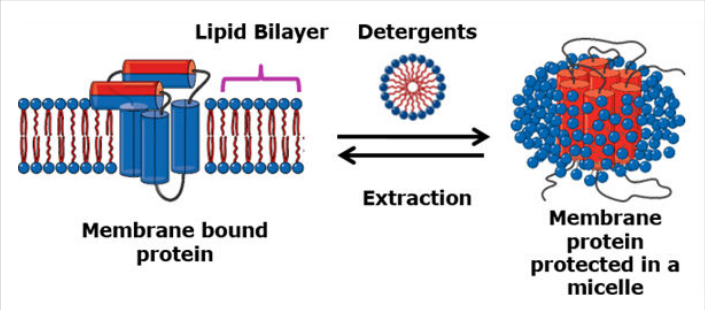
Note! The correct pH of the lysis buffer according to the original environment of the target protein keeps the protein stable. If using chromatography for purification, the lysis buffer should be the same as in the first step of purification to avoid additional buffer exchange. Lysis buffer might need additives like salts, detergents, sugars, EDTA and metal ions to stabilize the target protein to keep the protein in the solution. Probably the most important additives are protease inhibitors to protect the target proteins from proteolytic cellular enzymes.

Protease inhibitor cocktail (100X) #5871, Phosphatase inhibitor cocktail (100X) #5870 and Protease/Phosphatase inhibitor cocktail (100X) #5872 are available from Cell Signaling Technology.

Solubilization of membrane proteins

anatrace

Membrane protein isolation is more tedious process than the isolation of cytosolic proteins because the target protein needs to be kept in soluble, native and functional form when isolated from the lipid bilayer. The best method to achieve this is with the help of detergents. Detergents are amphipathic molecules that have both hydrophilic head and hydrophobic tail, just like the lipid membrane phospholipids.



In aqueous solution detergent monomers form micelle structures (micellization) where the hydrophobic tails are facing towards the micelle core and hydrophilic heads are out towards the solution. This way the detergents can mimic the lipid membrane environment and are able to capture the membrane protein inside the micelle.

Detergents

Anatrace offers a wide portfolio of detergents and lipids for membrane protein extraction, purification and crystallization. Anatrace detergents are available in two different purities: Anagrade with >99% purity and Sol-Grade >95% pure. For maltosides (DDM, DM, etc.) the purity also refers to the amount of alpha isomer (linkage between the sugars in the disaccharide). Anagrade maltosides contain <2% alpha anomer and Sol-Grade matlosides <5% alpha anomer.

Anatrace detergents are divided into following groups:

1. Maltosides - maltose derived detergents
2. Glucosides - glucose derived detergents
3. NG Class - modeled from the most popular alkyl glycoside detergents
4. Amine Oxides
5. CYMALs
6. HEGAs & Megas
7. Thioglucosides & Thiomaltosides

Most commonly used detergents

Non-ionic, sugar-based detergents derived from maltose or glucose are most often the first choice for membrane protein work. These are mild detergents and non-denaturing because they disrupt the protein-lipid and lipid-lipid interactions rather than protein-protein interactions.

DDM (Docecyl Maltoside) #D310:

- Low CMC: ~0,17 mM (0,0087 %), mild detergent
- Good for protein solubilization, purification, crystallization and cryo-EM
- Large micelles- not good for NMR

DM (Decyl Maltoside) #D322:

- Shortened version of DDM (2 carbon less)
- 10X higher CMC than DDM: ~1,8 mM (0,087%)
- Smaller micelles than DDM
- Easier to remove than DDM

Note! DDM/DM has been used in the extraction of over 80% of eukaryotic membrane protein

OG (Octyl Glucoside) #O311:

- Slightly harsher than DDM/DM/LMNG
- Very high CMC: ~18-20 mM (0,53 %)

LMNG (Lauryl Maltose Neopentyl Glycol) #NG310:

- NG class
- Two DDM molecules linked by central carbon
- Very low CMC (n/a)

Note! LMNG was used in the stabilization of the first ligand bound GPCR structure and currently ~50% of GPCR structures have been found with LMNG.

Protein purification

If you are lucky and have some target protein in the soluble fraction, you can move forward with your selected purification strategy. Are you struggling with inclusion bodies, your way might be a bit different. But be assured that BioNordika is trying to find good solutions for you.

The protein purification workflow is essential for achieving pure protein solution for downstream applications such as protein structure-functional studies and production of therapeutic proteins. Protein purification can be performed in various scales in columns with different sizes. Chromatography columns can be purchased pre-packed or empty columns can be packed manually with loose resins of your choice. In addition to columns, protein purification can also be performed in batch utilizing gravity flow or centrifugation.

Affinity chromatography (AC)

For most humans she has an affinity towards a he, but some of the she prefers a she or maybe a she and a he. And so it is in the protein world. A his-tagged protein seem to favour both Nickel and Cobolt, and antibodies prefer a protein A or a Protein G. No need to worry as BioNordika offers HiFliQ colums and resins for many sorts of proteins. There is no risk of changing to another supplier. We offer better prices and same quality, without the need of any kind of adaptors for your instrument.

As a result of its high selectivity, AC can be used as a single-step purification or to remove specific impurities. However, most often, AC is incorporated as an initiating step in purification workflows followed by one or more purification steps, depends on the required purity for downstream applications.

Prepacked HiFliQ columns

HiFliQ pre-packed and ready-to-use FPLC/HPLC columns are available with pre-charged heparin, Ni-NTA and Co-NTA and glutathione agarose as well as protein A and protein G. These columns are available in 1 mL & 5 mL sizes and compatible with all common chromatography HPLC and FPLC instruments including GE ÄKTA, low pressure pumps and syringes using an appropriate adaptor. Furthermore, they are compatible with a wide range of reducing agents, detergents and other buffer additives. Curious? Ask your local product specialists for performance testimonials.

HiFliQ Ni Advanced columns

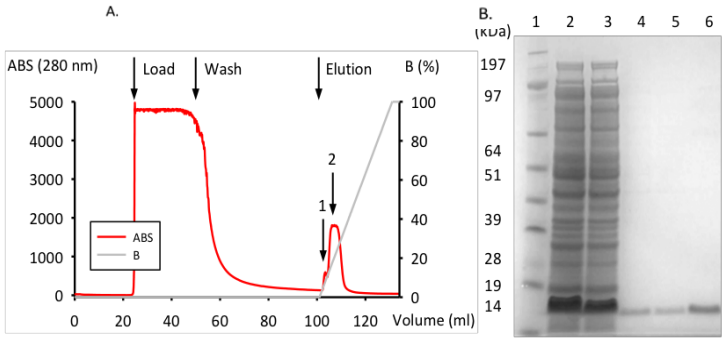
Ideal for secreted proteins and all intracellular protein expression. Fastback Ni Advance Resin is designed for faster purification of secreted proteins using clarified culture media directly. Available in 1 ml and 5 ml HiFliQ column sizes with high ligand density and high binding capacity.

- Works in your protocol, regardless of sample origin whether eukaryotic (insect, yeast, HEK293 or CHO) and bacteria (*E.coli*)
- Great results faster with fewer steps than conventional workflow- no need to buffer exchange your conditioned media; simply load clarified culture media directly on to the Ni Advance resin column
- Keep your buffer in its preferred conditions as Fastback Ni Advance resin is resistant to EDTA and DTT (up to 20 mM)

Product no	Product description	Quantity
HiFliQ1Ni-Adv-1 / HiFliQ1Ni-Adv-5	1 ml HiFliQ Ni Advance FPLC column	1 / 5 columns
HiFliQ5-Ni-Adv-1 / HiFliQ5-Ni-Adv-5	5 ml HiFliQ Ni Advance FPLC column	1 / 5 columns

Ni-NTA & Co-NTA columns

- Purification of poly-Histidine tagged recombinant proteins
- Drop-in substitutes for GE HiTraps
- Ni-NTA capacity: 50-75 mg (per 1 ml resin)
- Co-NTA capacity: 40-50 mg (per 1 ml resin)
- High DTT tolerance: 10 mM
- High flow rate: 1 mL/min (1 mL column), 1-5 mL/min (5 mL column)



Performance data for HiFliQ Ni-NTA FPLC column:
A: FPLC shows the purification of His-tagged protein from E.coli lysate using 1 mL HiFliQ Ni-NTA FPLC column. B: SDS-PAGE using NuSep nUView 4-20% gradient, Quick Coomassie stained. 1. MW marker, 2. E.coli lysate, 3 Flow-through, 4. Wash pool, 5. Elution (1), 6. Elution (2). Overall, this performance data shows that the elution peak (A) has an optimal resolution and the purity of the eluted, his-tagged proteins is substantiated by SDS-PAGE, lane 5 and 6.

Product no	Product description	Quantity
HiFliQ1-NiNTA-1 / HiFliQ1-NiNTA-5	1 ml HiFliQ Ni-NTA FPLC column	1 / 5 columns
HiFliQ5-NiNTA-1 / HiFliQ5-NiNTA-5	5 ml HiFliQ Ni-NTA FPLC column	1 / 5 columns
HiFliQ1-CoNTA-1 / HiFliQ1-CoNTA-5	1 ml HiFliQ Co-NTA FPLC column	1 / 5 columns

GST columns

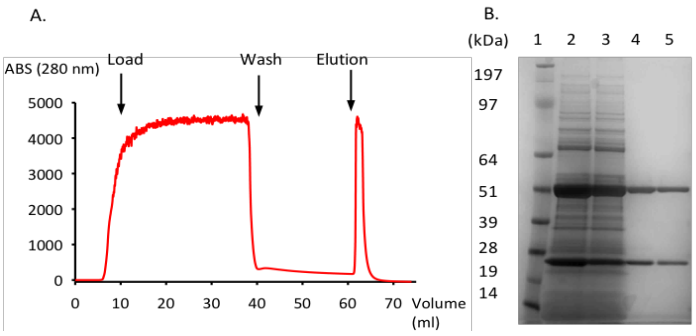
- Purification of Glutathione S-transferase (GST)-tagged proteins
- GST capacity: 10 mg (per 1 ml resin)
- High DTT tolerance: 10 mM
- High flow rate: 1 mL/min (1 mL column), 1-5 mL/min (5 mL column)

Product no	Product description	Quantity
HiFliQ1-GST-1 / HiFliQ1-GST-5	1 ml HiFliQ GST FPLC column	1 / 5 columns
HiFliQ5-GST-1 / HiFliQ5-GST-5	5 ml HiFliQ GST FPLC column	1 / 5 columns

Protein A & G columns

- Antibody purification from serum, ascites and tissue culture supernatants
- Protein A capacity (hIgG): 30 mg (per 1 ml resin)
- Protein G capacity (hIgG): 20 mg (per 1 ml resin)
- High flow rate: 1 mL/min (1 mL column), 1-5 mL/min (5 mL column)

Product no	Product description	Quantity
HiFliQ1-PA-1/ HiFliQ1-PA-5	1 ml HiFliQ Protein A FPLC column	1 / 5 columns
HiFliQ5-PA-1 / HiFliQ5-PA-5	5 ml HiFliQ Protein A FPLC column	1 / 5 columns
HiFliQ1-PG-1 / HiFliQ1-PG-5	1 ml HiFliQ Protein G FPLC column	1 / 5 columns
HiFliQ5-PG-1 / HiFliQ5-PG-5	5 ml HiFliQ Protein G FPLC column	1 / 5 columns



Performance data for purification of murine IgG1 from cell culture supernatant on a 1 ml HiFliQ Protein G FPLC column: A: FPLC chromatogram. B: SDS-PAGE analysis. SDS-PAGE using NuSep nUView 4-20% gradient, Quick Coomassie stained. 1. MW marker, 2. Supernatant, 3. Flow-through, 4. Wash pool, 5. Eluted IgG1. Overall, the sharp elution peak of IgG1 shows high yield, and the purity is shown with SDS-PAGE lane 5.

Heparin columns

- Purification of native or recombinant proteins such as enzymes, plasma coagulation proteins, lipoproteins, growth factors, nucleic acid binding proteins, hormone receptors, serine proteases inhibitors and extracellular matrix proteins
- Binding capacity: 3-5 mg (per 1 ml resin)
- High flow rate: 1 mL/min (1 mL column), 1-5 mL/min (5 mL column)

Product no	Product description	Quantity
HiFliQ1-HEP-1 / HiFliQ1-HEP-5	1 ml HiFliQ Heparin HP FPLC column	1 / 5 columns
HiFliQ5-HEP-1 / HiFliQ5-HEP-5	5 ml HiFliQ Heparin HP FPLC column	1 / 5 columns

Manually packed columns

Protein Ark also offers empty columns and loose resins for manual column packing for affordable prices. The loose resins are available in two different grades: High performance super resins with a mean bead size of 35 µm and offer a high selective binding capacity and fastback resins include Ni IMAC, Co IMAC, protein A and protein G with a mean bead size of 90 µm.

Fastback Resins

- Protein A & G, Co IMAC, Ni IMAC, S and Q for ion exchange chromatography
- Mean bead size 90 µm- Excellent tolerance to reducing agents

Product no	Product description	Quantity
Fastback-PA-1 / Fastback-PA-5 / Fastback-PA-25 / Fastback-PA-100	Fastback Protein A Sepharose FF Resin	1 / 5 / 25 / 100 ml
Fastback-PG-1 / Fastback-PG-5 / Fastback-PG-25 / Fastback-PG-100	Fastback Protein G Sepharose FF Resin	1 / 5 / 25 / 100 ml
Fastback-Ni-10 / Fastback-Ni-25 / Fastback-Ni-100	Fastback Ni IMAC Resin	10 / 25 / 100 ml
Fastback-Co-10 / Fastback-Co-25 / Fastback-Co-100	Fastback Co IMAC Resin	10 / 25 / 100 ml
Fastback-Q-10 / Fastback-Q-25 / Fastback-Q-100	Fastback Q IEX Resin	10 / 25 / 100 ml
Fastback-S-10 / Fastback-S-25 / Fastback-S-100	Fastback S IEX Resin	10 / 25 / 100 ml

High Performance Super Resins

- Ni-NTA, Co-NTA, Glu, Protein A, Protein G and Heparin
- Mean bead size 35 µm
- High selective binding capacity at the right price
- Excellent tolerance to reducing agents

Product no	Product description	Quantity
Super-HEP10 / Super-HEP25 / Super-HEP100 / Super-HEP250	Super Heparin Agarose HP Resin	10 / 25 / 100 / 250 ml
Super-NiNTA10 / Super-NiNTA25 / Super-NiNTA100	Super Ni-NTA Agarose Resin	10 / 25 / 100 ml
Super-CoNTA10 / Super-CoNTA25 / Super-CoNTA100	Super Co-NTA Agarose Resin	10 / 25 / 100 ml
SuperGlu10A / SuperGlu25A / SuperGlu100A	Super Glutathione Agarose Resin	10 / 25 / 100 ml

Alternatives resins

Still can't find resins suitable for your special protein? Hang on, we do have alternatives for you from New England Biolabs (NEB):
Hydrophilic Streptavidin Magnetic Beads are 2-3 µm superparamagnetic particles covalently coupled to streptavidin for affinity purification of biotin-labeled target such as antigens, antibodies and nucleic acids. The beads will bind more than 800 pmol of free biotin per mg and more than 400 pmol of single-stranded 25 bp biotinylated oligonucleotide per mg.
Amylose magnetic beads are superparamagnetic particles coupled to amylose through a linkage that is stable and leak resistant over a wide pH range and hence allow affinity purification or pull down assays of MBP-fusion proteins.
Chitin magnetic beads are beads that allow magnetic isolation of chitin binding domain fusion proteins with a binding capacity of 2 mg chitin binding domain protein/ml bed volume.

Product no	Product description	Size
S1421S	Hydrophilic Streptavidin Magnetic Beads, 4mg/mL	5 ml
E8035S	Amylose magnetic beads, 10 mg/mL	25 mg
E8036S / E8036L	Chitin magnetic beads	5 / 25 ml

Empty FliQ FPLC chromatography columns

- Compatible with FPLC & HPLC
- Bead volume 1 ml, 5 ml, 10 ml and 20 ml
- Both ends of the FliQ columns have 10-32 UNF threads which fits all common chromatography instruments including GE AKTA
- Flow rate: 0.5 to 2 ml/min

Product no	Product description	Volume
GEN-FliQ1 / GEN-FliQ5 / GEN-FliQ10 / GEN-FliQ20	FliQ Column	1 / 5 / 10 / 20 ml
GEN-10.32	10.32 packing connector	

Ion exchange chromatography

Protein Ark

Ion exchange chromatography (IEX) separates proteins based on the net surface charge, which varies according to the surrounding pH. Protein separation is based on the reversible interaction between the opposite charges of the protein of interest and the base matrix. Elution is commonly achieved by increasing the salt concentration or altering the surrounding pH either stepwise or in a continuous linear gradient. As for affinity chromatography, IEX could also be used to bind and remove specific impurities.

Q-type (Quarternary ammonium group) for purification of negatively charged proteins

- Binding capacity: 50-70 mg (per 1 ml resin)
- High flow rate: 1 mL/min (1 mL column), 1-6 mL/min (5 mL column)

S-type (Sulphonic acid propyl) for purification of positively charged proteins

- Binding capacity: 50-70 mg (per 1 ml resin)
- High flow rate: 1 mL/min (1 mL column), 1-6 mL/min (5 mL column)

Product no	Product description	Quantity
HiFliQ1-Q-1 / HiFliQ1-Q-5	1 ml HiFliQ Q IEX Agarose FPLC column	1 / 5 columns
HiFliQ5-Q-1 / HiFliQ5-Q-5	5 ml HiFliQ Q IEX Agarose FPLC column	1 / 5 columns
HiFliQ1-S-1 / HiFliQ1-S-5	1 ml HiFliQ S IEX Agarose FPLC column	1 / 5 columns
HiFliQ5-S-1 / HiFliQ5-S-5	5 ml HiFliQ S IEX Agarose FPLC column	1 / 5 columns

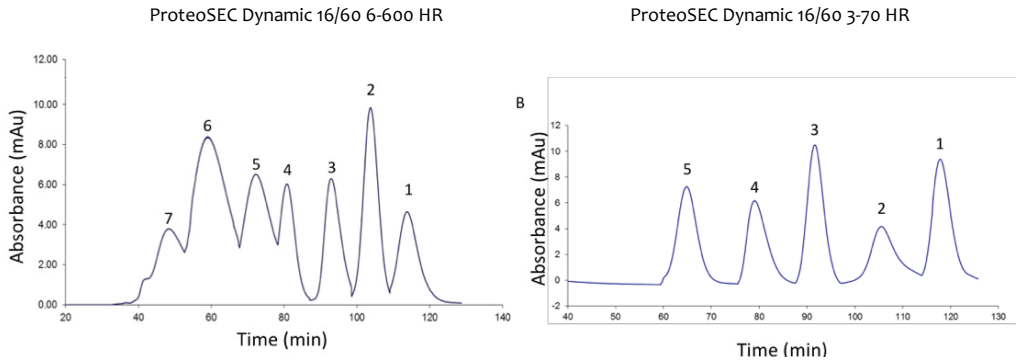
Size exclusion chromatography

Size exclusion chromatography (SEC) separates proteins based on the size and shape of the proteins of interest. SEC is suitable as the final purification step, as the sample volume has been reduced significantly at this point of the purification workflow. Elution is performed isocratically without a gradient.

ProteoSEC Dynamic Size Exclusion AKTA Columns

- High resolution (HR) preparative grade columns with comparable performance to GE Healthcare Superdex™ 200 pg (6-600 HR) and Superdex™ 75 pg (3-70 HR) SEC columns
- 3 different column sizes: 11/30, 16/60 and 26/60

- Separation range:
  '3-70' HR acrylic columns: 3-70 kDa
  '6-600' HR acrylic columns: 6-600 kDa
- Dynamic means that these columns come with removable end caps. This allows the end caps and any dirty resin removed easily
- Both HR resins are co-polymers of dextran and agarose and have a mean particle size of approx. 35 µm (20-50 µm).



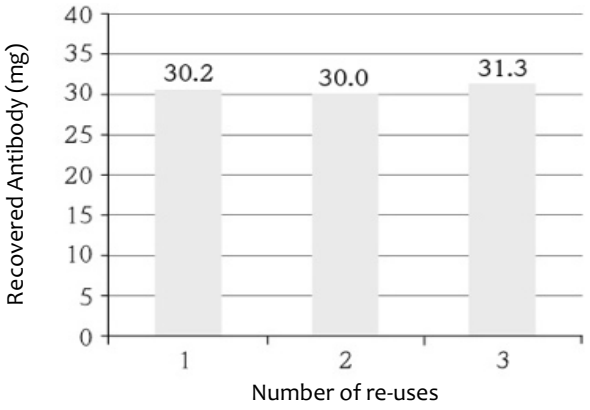
Performance data: Separation of test substances on a (A) ProteoSEC 16/600 6-600 HR gel filtration column and B) ProteoSEC 16/600 3-70 HR gel filtration column.
Flowrate: 1 ml/min; sample loading 0.5 ml; mobile phase: PBS (phosphate buffered saline).
A. Model proteins 1: Aprotinin (Mr 6,500); 2: Cytochrome c (Mr 12,300); 3: Beta-Lactoglobulin (Mr 35,000); 4: BSA (Mr 67,000); 5: gamma-Globulin IgG (Mr 158,000); 6: Apoferritin (Mr 440,000); 7: Thyroglobulin (Mr 669,000)
B. Model proteins 1: Vit B-12 (Mr 1,200); 2: Aprotinin (Mr 6,500); 3: Cytochrome c (Mr 12,300); 4: Beta-Lactoglobulin (Mr 35,000); 5: BSA (Mr 67,000).

Product no	Product description	Specification
SEC-D-11/30-3-70	ProteoSEC Dynamic Size Exclusion Column	11 mm ID; 30 cm length, 3-70 kDa HR resin
SEC-D-16/60-3-70	ProteoSEC Dynamic Size Exclusion Column	16 mm ID; 60 cm length, 3-70 kDa HR resin
SEC-D-26/60-3-70	ProteoSEC Dynamic Size Exclusion Column	26 mm ID; 60 cm length, 3-70 kDa HR resin
SEC-D-11/30-6-600	ProteoSEC Dynamic Size Exclusion Column	11 mm ID; 30 cm length, 6-600 kDa HR resin
SEC-D-16/60-6-600	ProteoSEC Dynamic Size Exclusion Column	16 mm ID; 60 cm length, 6-600 kDa HR resin
SEC-D-26/60-6-600	ProteoSEC Dynamic Size Exclusion Column	26 mm ID; 60 cm length, 6-600 kDa HR resin

Proteus 1-step batch spin columns

Proteus 1-step batch spin columns are designed for small scale protein purifications such as those required for expression trials, solubility determination tests, screening, titering and scouting studies. The incorporated SelfSeal membrane retains the resin of choice and the sample in the incubation chamber, allowing end-users to control the incubation time. Only upon centrifugation, the pores of the membrane dilate, allowing the filtered eluate to enter the collecting tube.

- Compatible with any chromatography resin
- Pore size: 0.1-0.2 µm low protein binding PVDF
- Final product: Highly concentrated purified protein



Performance data:
The typical IgG capacity of a Protein A '1-step batch' spin column after 3 reuses using unclarified rabbit serum.
The serum was incubated for 20 min in batch mode on a roller and the purified IgG was then eluted using centrifugation at 200 g for 2 min. This column can be reused several times without reduced performance.

Product no	Product description	Quantity
GEN-1SBM-40 / GEN-1SBM-100	Proteus 1-step Batch Mini Spin Column Pack	40 / 100 pcs
GEN-1SB08P	Proteus 1-step Batch Midi Plus Spin Column Pack	8 pc

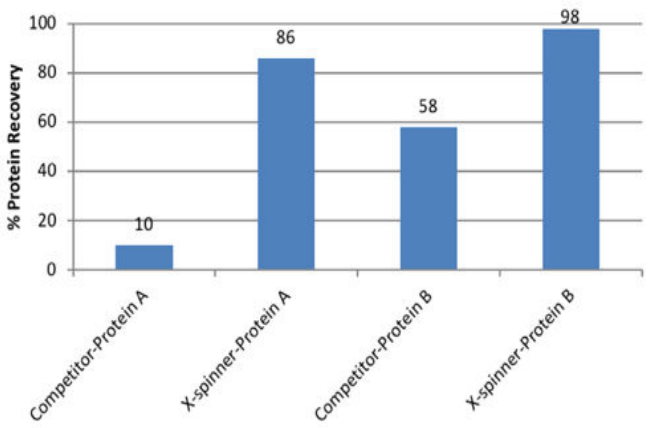
Ultrafiltration

Losing too much proteins upon ultrafiltration? Non-stick Proteus X-spinner 2.5 concentrator provides the highest possible protein recoveries guaranteed due to the low protein binding CTA membrane and ultrafiltration is in the opposite direction to the centrifugal force, hence keeping the proteins of interest away from the membrane.

- Protein Ark offers ultrafiltration membrane disks for concentrating, buffer exchange and de-salting all proteins, peptides and other macromolecules
- Ideal for dilute or viscous samples and sticky/hydrophobic proteins
- Available in 5, 10, 20, 100 & 300 kDa MWCOs
- Sample volume range: 0.1- 2.5 ml
- Hold-up volume: 25 µL

Product no	Product description	Quantity
PAL-X-5-24 / PAL-X-5-96	Proteus X-spinner 2.5 Pack (5 kDa MWCO, cellulose tri-acetate membrane)	24 / 96 pc
PAL-X-10-24 / PAL-X-10-96	Proteus X-spinner 2.5 Pack (10 kDa MWCO, cellulose tri-acetate membrane)	24 / 96 pc
PAL-X-20-24 / PAL-X-20-96	Proteus X-spinner 2.5 Pack (20 kDa MWCO, cellulose tri-acetate membrane)	24 / 96 pc
PAL-X-100-24 / PAL-X-100-96	Proteus X-spinner 2.5 Pack (100 kDa MWCO, PES membrane)	24 / 96 pc
PAL-X-300-24 / PAL-X-300-96	Proteus X-spinner 2.5 Pack (300 kDa MWCO, PES membrane)	24 / 96 pc

Performance data:
Up to 98% protein recoveries were observed with 2.5 ml hydrophobic protein concentrated to 0.25 ml at 2,500 g.



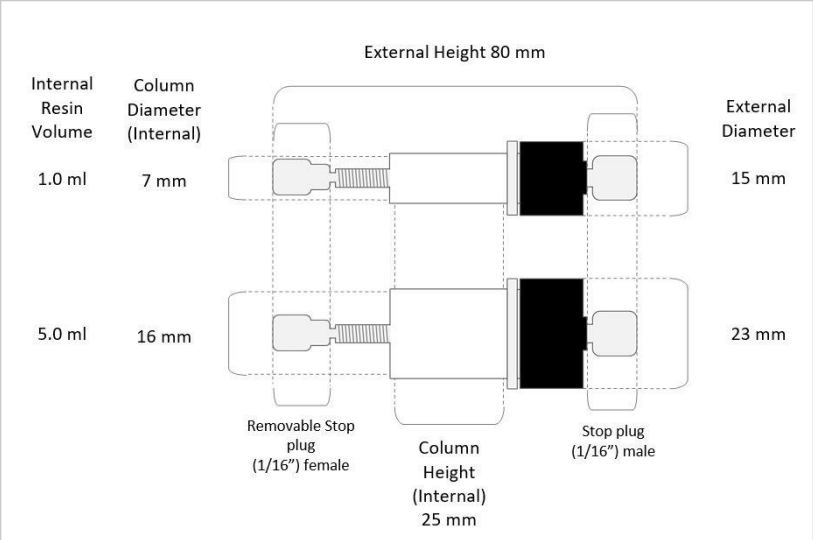
Custom services

Protein Ark

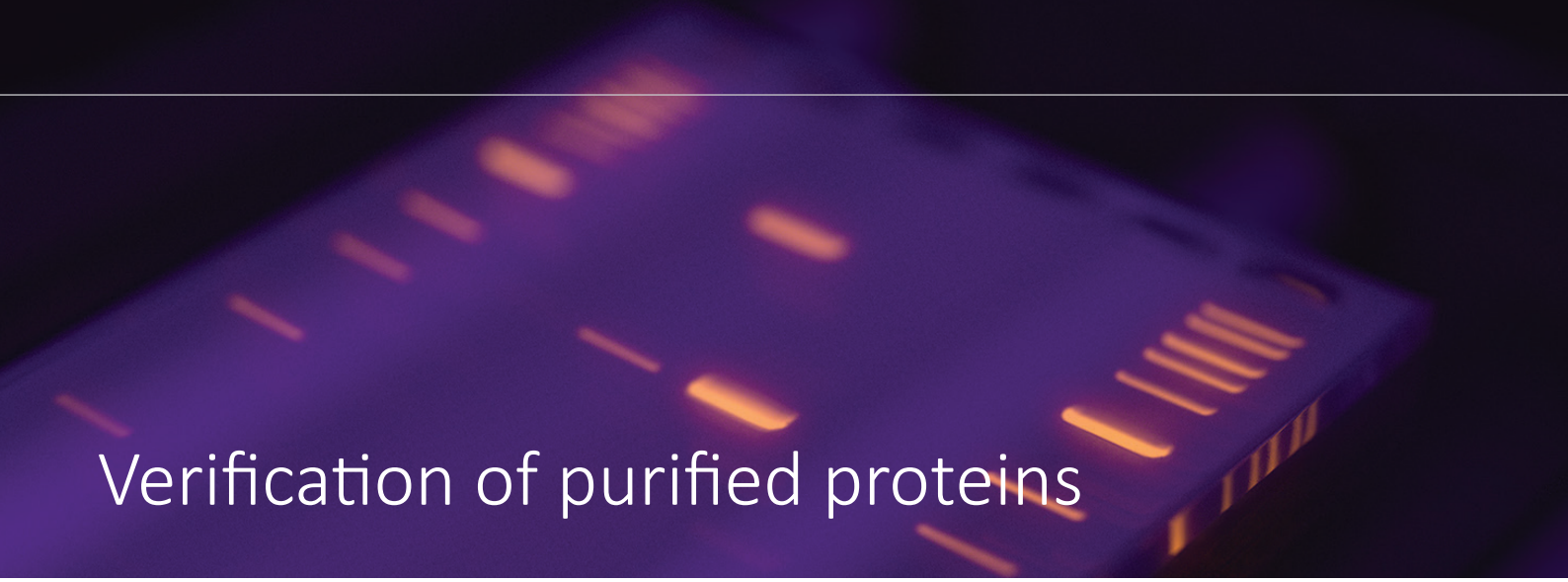
Custom HiFliQ column packing

Do you think manual column packing is time-consuming and inconvenient? We have a solution for you! Protein Ark/BioServ offers a comprehensive, fast and reliable HiFliQ lab column packing service for any resins of your choice, including any third-party resins, e.g. agarose, glass, ceramic, polystyrene, polymethacrylate.
This service is available for columns in 1 mL and 5 mL HiFliQ sizes, that are compatible with all common chromatography HPLC and FPLC instruments including GE ÄKTA and can be connected in series for increased capacity.

Applications:
- Purification of Recombinant and Native Proteins
- DNA & RNA Purification
- Purification of Recombinant Peptides
- Screening Expression Clones



Prices for this custom column packing service are highly competitive. Ask your local product specialists for more info.

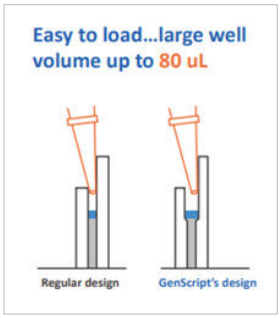


Verification of purified proteins

Protein gels

After the proteins have been purified, it's good to confirm that the protein is the right size and that you have a sufficient amount of purified proteins. Running a SDS-PAGE gel separates proteins by their molecular sizes. Smaller proteins run faster through the pores of the gel.

BioNordika and Genscript offers Bis-Tris precast protein gels that are designed to separate a wide range of protein sizes by electrophoresis. The gels are cast in a neutral pH that minimizes polyacrylamide hydrolysis and increases gel stability. They also run at a neutral pH which minimizes protein modifications compared to Tris-glycine gels.



- Large well volume - Up to 80 µl for diluted samples
- High resolution - Even, sharp bands, guaranteed lot-lot consistency
- Long shelf life - Up to 12 months at 2- 8 °C
- Cost effective - 30- 50 % price reduction compared to other major competitors
- Compatible cassette design - Fits all popular mini-gel tanks

SurePAGE™, Bis-Tris gels are a major upgrade from ExpressPlus™ gels with enhanced casting technology that results in better resolution and consistency. The ExpressPlus gel range consists of good quality and very cost-effective gels.

Running buffer recommendations are Tris-MOPS SDS or MES SDS; MOPS for large and medium proteins, and MES for small proteins. Tris-glycine buffer is not compatible with GenScript's precast gels. MOPS or MES buffer is included in the price of the gels.

Product no	Product description	% acrylamide	Well no.	Well volume	Quantity
M00652 / M00653 / M00654	SurePAGE™, Bis-Tris, 10x8	4 - 12 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M00655 / M00656 / M00657	SurePAGE™, Bis-Tris, 10x8	4 - 20 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M00658 / M00659 / M00660	SurePAGE™, Bis-Tris, 10x8	8 - 16 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M00661 / M00662 / M00663	SurePAGE™, Bis-Tris, 10x8	8 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M00664 / M00665 / M00666	SurePAGE™, Bis-Tris, 10x8	6 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M00664 / M00665 / M00669	SurePAGE™, Bis-Tris, 10x8	10 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M00667 / M00668 / M00669	SurePAGE™, Bis-Tris, 10x8	12 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels

Product no	Product description	% acrylamide	Well no.	Well volume	Quantity
M00810 / M00812 / M00815	ExpressPlus™ PAGE Gel, 10×8	8 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M01010 / M01012 / M01015	ExpressPlus™ PAGE Gel, 10×8	10 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M01210 / M01212 / M01215	ExpressPlus™ PAGE Gel, 10×8	12 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M41210 / M41212 / M41215	ExpressPlus™ PAGE Gel, 10×8	4 - 12 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M42010 / M42012 / M42015	ExpressPlus™ PAGE Gel, 10×8	4 - 20 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels
M81610 / M81612 / M81615	ExpressPlus™ PAGE Gel, 10×8	8 - 16 %	10 / 12 / 15	80 / 60 / 40 µl	10 gels

Sample buffer

For best result, we recommend using 4X LDS Sample Buffer to prepare protein samples for denaturing polyacrylamide gel electrophoresis (PAGE) with SurePAGE™, ExpressPlus™ and most other types of Bis-Tris gels. LDS sample buffer contains lithium dodecyl sulfate with pH at 8.4, which helps reducing the disulfide bonds and ensure optimal protein separation.

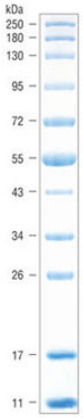
Product no	Product description	Quantity
M00676-10 / M00676-250	4 x LDS sample buffer	10 / 250 ml

Protein ladders

The selection of protein ladders on the market is huge. There are ladders for all type of protein separation. Here we show some of the ladders that we offer from our suppliers.

Blue Prestained Protein Standard, Broad Range (11-250 kDa)

The Blue Prestained Protein Standard, Broad Range is a mixture of highly pure, recombinant, prestained proteins, covalently coupled with a blue chromophore, that resolves into 11 sharp bands when electrophoresed.

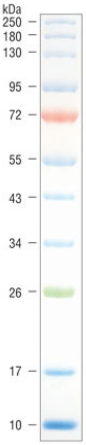


- Allows approximate molecular weight determination when performing SDS-PAGE analysis
- Applications include verification of Western transfer efficiency on membranes and fluorescent imaging of SDS-PAGE
- Direct loading, additional loading buffer and heat incubation not required
- Recombinant proteins with no detectable protease contaminating activities
- Optimal stability for up to 24 months

Product no	Product description	Size
P7718S / P7718L	Blue Prestained Protein Standard, Broad Range (11-250 kDa)	150 / 750 mini-gel lanes

Color Prestained Protein Standard, Broad Range (10-250 kDa)

The Color Prestained Protein Standard, Broad Range is a mixture of highly pure, recombinant, prestained proteins, covalently coupled with a blue chromophore, and two reference bands (one orange and one green at 72 kDa and 26 kDa, respectively), that resolves into 11 sharp bands when electrophoresed.



- Allows approximate molecular weight determination when performing SDS-PAGE analysis
- Applications include verification of Western transfer efficiency on membranes and fluorescent imaging of SDS-PAGE
- Direct loading, additional loading buffer and heat incubation not required
- Recombinant proteins with no detectable protease contaminating activities
- Optimal stability for up to 24 months

Product no	Product description	Size
P7719S / P7719L	Color Prestained Protein Standard, Broad Range (10-250 kDa)	150 / 750 mini-gel lanes

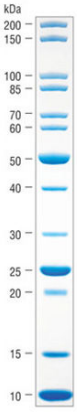
Elite Pre-stained Protein Ladder (6.5 - 270 kDa)

The Elite Pre-stained Protein Ladder is a three-color protein standard with 10 pre-stained proteins covering a wide range of molecular weights, from 6.5 to 270 kDa. Designed for monitoring protein separation during PAGE and providing clear electro-transfer to commonly used membranes.

- High-intensity, 3-colour molecular weight determination
- Ultra-clear and expanded molecular weight range (6.5 - 270 kDa)
- Clear separation for high molecular weight proteins
- Up to 100% electroblot transfer efficiency (Seema Qamar,CIMR, Cambridge University 2018)
- LICOR-compatible

Product no	Product description	Size
PAL-EPL-500 / PAL-EPL-2500	Elite Pre-stained Protein Ladder	2 x 0.25 ml / 10 x 0.25 ml

Unstained Protein Standard, Broad Range (10-200 kDa)

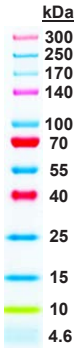


The Unstained Protein Standard, Broad Range is a mixture of highly pure, recombinant proteins that resolves into 13 sharp bands from 10-200 kDa when electrophoresed and stained with Coomassie Brilliant Blue R-250 or other commercially available, ready-to-use protein stains.

- Allows accurate molecular weight determination when performing SDS-PAGE analysis
- Direct loading, additional loading buffer and heat incubation not required
- Recombinant proteins with no detectable protease contaminating activities
- Optimal stability for up to 24 months

Product no	Product description	Size
P7717S / P7717L	Unstained Protein Standard, Broad Range (10-200 kDa)	150 / 750 mini-gel lanes

ProSieve QuadColor Protein Marker (4.6-300 kD)



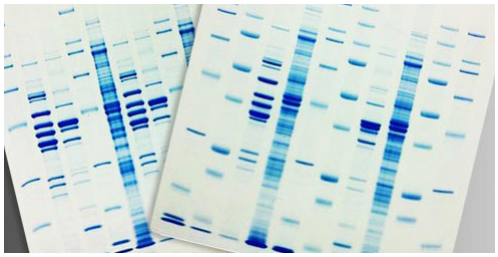
ProSieve™ QuadColor Protein Marker is an easy method for monitoring protein separation prior to staining, and provide accurate confirmation of protein transfer in Western blotting. It is a mixture of 12 recombinant, highly purified proteins with molecular weights of 4.6, 10, 15, 25, 40, 55, 70, 100, 140, 170, 250, and 300 kDa. The proteins are individually pre-stained using four different dyes, producing a brightly colored ladder with an easy-to-remember pattern. The ProSieve™ QuadColor™ protein marker is ready-to-use: no heating, further dilution or addition of a reducing agent is required before use.

Product no	Product description	Size
193837	ProSieve QuadColor Protein Marker (4.6-300 kD)	500 ul

Stains

GenScript
Make Research Easy

Quick coomassie stain



- Rapid staining - Protein bands appear after minutes - Fully stained after 1 hour
- Highly sensitive - 5 ng bands resolved
- Accurate protein quantification - Low background - Linear staining range
- Re-useable - Up to 3 times
- Storage - 1 year at room temperature

Product no	Product description	Quantity
GEN-QC-STAIN-1L / GEN-QC-STAIN-3L	Quick Coomassie Stain	1 / 3 liter

Realtime Stain

Realtime stain is a revolutionary dual use protein visualization and sample loading buffer specially formulated for SDS polyacrylamide gel electrophoresis (PAGE). A unique alternative to the current post-staining techniques; simply add the Realtime stain to your protein sample and heat, then watch your protein bands appear in the first 5-10 minutes of the gel running. The simple protocol offers you the flexibility to optimize and customize the labelling efficiency with the capability to generate your own pre-stained molecular weight standards

- Applications (3 in 1)- Protein pre-staining- Sample loading buffer- Molecular weight standard production
- Cost effective- 40 lanes / 4 gels (0.2 ml)- 400 lanes / 40 gels (2 ml)
- Optimize- Time & temperature- Reducing agent
- SDS PAGE compatibility- Cast & pre-cast gels (inc: Tris Glycine, Tris HEPES, & Bis-Tris)
- Sensitivity- Linear range down to 50 ng
- Samples- Optimized for pure and partially-pure protein samples
- Ultra filtration columns (UFC)- 1x Vivaspin 20, 10,000 kDa (2 ml only) (Molecular weight standard production)

Product no	Product description	Quantity
GEN-RT-STAIN-2000 / GEN-RT-STAIN-200	Realtime stain	400 prep., appr. 40 gels / 40 prep. appr. 4 gel

Molecular biology water

Nuclease-free water

Ideal for the preparation of reagents and for use in enzymatic reactions. No toxic agents, such as DEPC, are used in production, so as to avoid inhibition in enzymatic reactions.

Product no	Product description	Quantity
B1500S /	Nuclease-free Water	25 ml
B1500L	Nuclease-free Water	4 x 25 ml

AccuGENE™ molecular biology water

AccuGENE Water from Lonza is considered a “fit for purpose” Type I water and is created for use specifically in molecular biology applications.

Product no	Product description	Quantity
51200	AccuGENE™ Molecular Biology Water	1 L bottle
51244	AccuGENE™ Molecular Biology Water	4 L bag with a tap
51223	AccuGENE™ Molecular Biology Water	10 L bag with a tap
51224	AccuGENE™ Molecular Biology Water	20 L bag with a tap

Bovine serum albumin (BSA), molecular biology grade

Bovine Serum Albumin (BSA) stabilizes some proteins during incubation. It can also be used to prevent adhesion of enzymes to reaction tubes and pipette surfaces.

Product no	Product description	Quantity
B9000S	BSA Molecular Biology Grade (conc. 20 mg/ml)	12 mg

eSTAIN

If you are doing a lot of staining and need nice photos, we also offer the instrument called eSTAIN from Genscript. Maybe an alternative to stain-free gels?

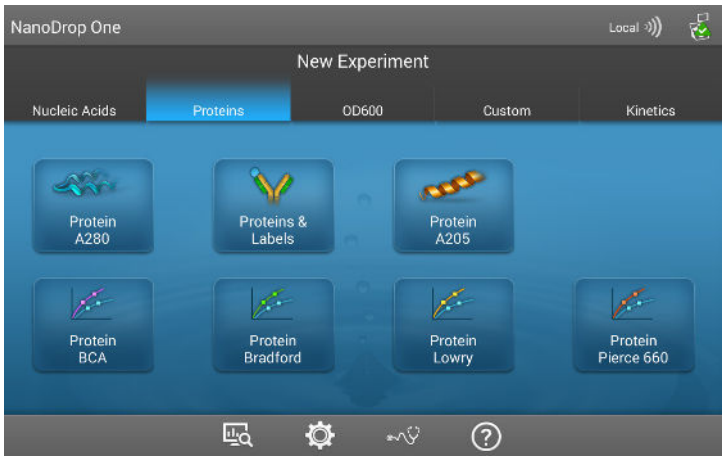
- Fast staining/destaining in less than 10 minutes stain/destain
- Automatic
- Sensitivity ≥ 12.5ng
- 2 gels can be stained/destained at same time

Product no	Product description
L00657	eSTAIN

Quantification of nucleic acids and proteins

NanoDrop™ One/OneC UV-Vis Spectrophotometers

Thermo Scientific NanoDrop One/OneC UV-Vis spectrophotometers support protein sample quantification with applications for direct A280, A205 and colorimetric assays. There are several things to consider when deciding which method to use to quantify your protein samples using a NanoDrop UV-Vis spectrophotometer:



Is your sample a purified protein? Purified protein samples can be accurately measured using direct absorbance at 280 nm. Absorbance at 280 nm is mostly due to the aromatic chains on the amino acids Tryptophan (Trp) and Tyrosine (Tyr). *Protein A280* is the most popular quantification method because it is fast and simple, requires no reagents or standard curves, and consumes very little sample. Each pure protein has a unique extinction coefficient. For accurate results, the correct protein extinction coefficient ε must be entered or the closest Sample Type must be selected. The NanoDrop One *Protein Editor* feature allows you to save the extinction coefficients of specific proteins so that you can customize your Sample Type options.

In addition to concentration, protein measurements on the NanoDrop One spectrophotometer deliver information about contaminants in the sample, such as nucleic acids. Sample purity can also be assessed by looking at the A260/A280 value. An A260/A280 value >1 may indicate nucleic acid contamination in the protein sample.

Proteins in complex mixtures such as cell extracts or lysates are best measured using a protein colorimetric assay such as *Bradford, BCA, Lowry* or *Pierce 660nm Assay*. These assays provide protein-specific concentrations, avoiding absorbance from cell components that absorb in the UV range and would inflate A280.

Does your protein/peptide contain Trp and Tyr residues? A protein's peptide backbone absorbs light at 190-220 nm. Peptides that lack Tyr or Trp residues (and therefore cannot be measured using the A280 application) can be quantified using absorbance at 205 nm. Proteins that have significant amounts of Trp and Tyr can also be quantified using the Protein A205 application.

Is your protein labeled? Labeled antibodies or other fluorescently labeled proteins and metalloproteins can be quantified using the Proteins & Labels application that delivers the protein as well as the label concentration. *Proteins and Labels* is available as a preconfigured application on NanoDrop One/OneC.

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