



**GRISP**

RESEARCH SOLUTIONS

CATALOG

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# ABOUT GRISP

Since 2008 located in Porto, Portugal, GRISP empowers life science research by supplying researchers in the growing fields of molecular biology, biotechnology, biochemistry and genetics, with high-quality reagents, kits and solutions.

Dedicated to the development, production and commercialization of cutting-edge as well as everyday products, our team is highly motivated to provide these value-added tools at competitive prices, allowing our customers to drive their research to the next level.

At GRISP, we strive to the perfect combination of performance, service and costs, always keeping you in mind. We believe this catalogue gives you access to a comprehensive range of products for DNA electrophoresis, Nucleic Acid Purification, PCR, qPCR, RNA research, protein research, cell biology and related areas, which meets your needs to achieve excellent results.

Find out more about us at [www.grisp.pt](http://www.grisp.pt) or ask your local distributor, and do not hesitate to contact us with your questions or suggestions, because your feedback matters!

GRISP TEAM

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# 01 DNA ELECTROPHORESIS

Fast Electrophoresis  
Buffers  
DNA Stains  
Agarose  
DNA Ladders



# FAST ELECTROPHORESIS

DNA Agarose Gel Electrophoresis under fast conditions with SGTB Buffer

## SGTB AGAROSE ELECTROPHORESIS BUFFER

SGTB is a unique buffer ideal for Agarose Electrophoresis of DNA fragments of 100bp to 1000bp.

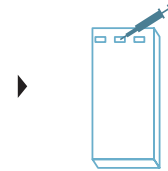
**1L 20x** - ref. GB01.0120

**5L 20x** - ref. GB01.0520

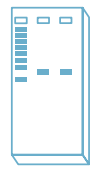
**Time saving** - allows much faster runs; **High Resolution** - electrophoresis results in very sharp bands; **Better Separation** - larger relative distance between bands of similar size; **Clearer and stronger gels**; **Save money** - up to 25% saving on agarose.



Prepare gel



Load samples



Run gel  
(minigel in 15 min.  
at 250V for SGTB)

## BUFFERS

### GRS DNA LOADING BUFFER BLUE (6x)

Convenient solution containing Bromophenol Blue and Xylene Cyanol FF as tracking dyes

**1mL** - ref. GLB01.0001

**5x 1mL** - ref. GLB01.0501

### TBE BUFFER (10x)

TBE Buffer (10x) is an aqueous solution of 0.89M Tris, 0.89 M boric acid, and 0.02M EDTA, prepared with ultrapure water, and 0.2 µm filtered.

**1L** - ref. GB12.0110

**5L** - ref. GB12.0510

### TAE BUFFER (10X)

TAE Buffer (10X) is an aqueous solution of 400mM Tris, 200mM acetic acid, and 10mM EDTA, prepared with ultrapure water, and 0.2 µm filtered.

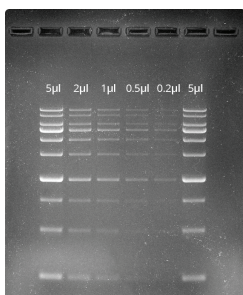
**1L** - ref. GB11.0110

**5L** - ref. GB11.0510

## DNA STAINS

New and safe alternatives to ethidium bromide (EtBr) for the visualization of DNA and RNA in agarose and polyacrylamide gels.

- Safe (non-carcinogenic, non-mutagenic, non-toxic)
- For dsDNA, ssDNA and RNA
- For Agarose and Polyacrylamide gels
- No hazardous waste
- Compatible with both UV light and Blue LED
- Improved cloning efficiency (when using Blue LED)



**Figure 1.** Electrophoresis of different quantities of GRS Ladder 1kb on a 1.2% agarose gel (TAE, 90V, 60min).  
Albeit 5µl is recommended, when applying only 1µl, all bands can be readily detected with Xpert Green DNA Stain using a Blue LED transilluminator.

	UV Compatible	Blue Light Compatible	Detection Limit (ng)
Xpert Green DNA Stain	✓	✓	0.5-5.0
Xpert Green DNA Stain Direct	✓	✓	0.1-1.0
EtBr	✓	✗	0.5-5.0

### XPERT GREEN DNA STAIN

- As sensitive as EtBr
- Developed for in-gel staining.

**1 mL (20.000X)** - ref. GS01.0001

### XPERT GREEN DNA STAIN DIRECT

- Direct Loading (no need for loading dye)
- Magnificent signal-to-noise ratio
- Ultrasensitive

**1 mL** - ref. GS02.0001



# AGAROSE

Molecular Biology Grade agarose, DNase- RNase- and Protease-free, suitable for the most demanding applications. High purity allowing high resolution.

## GRS AGAROSE LE

High resolution for routine analytical and preparative applications.

**500 g** - ref. GA110.0500

# DNA LADDERS

Set of six different roomtemperature stable and ready-to-use DNA ladders. All consisting of very sharp bands and with internal reference bands included.

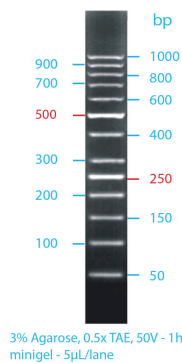
Recommended loading of 2-5  $\mu$ L per lane.

## GRS LADDER 50BP

Suitable for sizing linear double-stranded DNA fragments from 50bp-1000bp. Composed of 13 linear individual DNA fragments.

All bands (except 250bp and 500bp, which have increased intensity) are supplied at approximately 40ng/5 $\mu$ L

**50  $\mu$ g** - ref. GL031.0050  
**5x 50  $\mu$ g** - ref. GL031.5050

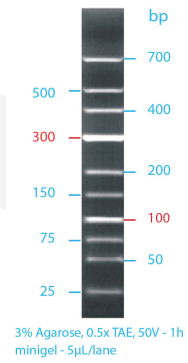


## GRS LOW RANGE LADDER

Suitable for sizing linear double-stranded DNA fragments from 25bp-700bp. Composed of 10 linear individual DNA fragments.

All bands (except 100bp and 300bp, which have increased intensity) are supplied at approximately 40ng/5  $\mu$ L

**50  $\mu$ g** - ref. GL011.0050  
**5x 50  $\mu$ g** - ref. GL011.5050

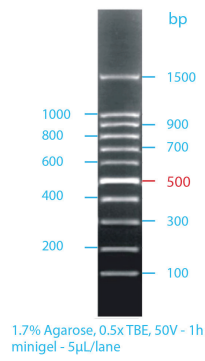


## GRS LADDER 100BP

Suitable for sizing linear double-stranded DNA fragments from 100bp-1500bp. Composed of 11 linear individual DNA fragments.

All bands (except 500bp, which has increased intensity) are supplied at approximately 40ng/5 $\mu$ L

**50  $\mu$ g** - ref. GL041.0050  
**5x 50  $\mu$ g** - ref. GL041.5050

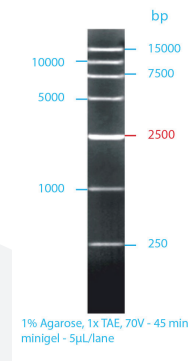


## GRS HIGH RANGE LADDER

Suitable for sizing linear double-stranded DNA fragments from 250bp-15kb. Composed of 7 linear individual DNA fragments.

All bands (except 2500bp, which has increased intensity) are supplied at approximately 40ng/5  $\mu$ L

**50  $\mu$ g** - ref. GL021.0050  
**5x 50  $\mu$ g** - ref. GL021.5050

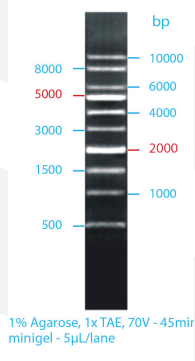


## GRS LADDER 1KB

Suitable for sizing linear double-stranded DNA fragments from 500bp-10kb. Composed of 10 linear individual DNA fragments.

All bands (except 2kb and 5kb, which have increased intensity) are supplied at approximately 40ng/5 $\mu$ L

**50  $\mu$ g** - ref. GL051.0050  
**5x 50  $\mu$ g** - ref. GL051.5050

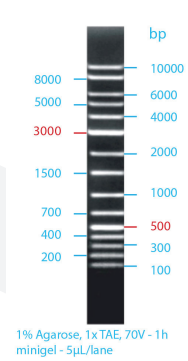


## GRS UNIVERSAL LADDER

Suitable for sizing linear double-stranded DNA fragments from 100bp-10kb. Composed of 15 linear individual DNA fragments.

All bands (except 500bp and 3kb, which have increased intensity) are supplied at approximately 40ng/5  $\mu$ L

**50  $\mu$ g** - ref. GL061.0050  
**5x 50  $\mu$ g** - ref. GL061.5050



# 02 NUCLEIC ACID PURIFICATION

PCR Purification  
gDNA Purification  
RNA Purification  
DNA/RNA Purification  
DNA/RNA/Protein Purification  
Plasmid Purification  
Enzymes  
Columns



## PCR PURIFICATION

Complete range of PCR clean-up products based on the best available technologies. Including enzymatic, spin column and beads based purification methods.

### GRS PCR & GEL BAND PURIFICATION KIT

The GRS PCR & Gel Band Purification Kit provides an efficient and fast method for the purification and/or concentration of high quality DNA fragments (70bp to 15kb) from PCR reactions, enzymatic restriction digestion or from agarose gels. Recovers up to 95% (PCR clean-up) or up to 90% (Gel Extraction).

**100 preps** - ref. GK01.0100

! Contains a pH indicator to ensure optimal pH for DNA binding.

### EXO/SAP GO - PCR PURIFICATION KIT

Enzymatic PCR Clean-Up kit, comprising Exonuclease I (Exo I) and recombinant Shrimp Alkaline Phosphatase (rSAP) in an optimal molar ratio. Unused primers are hydrolyzed by Exo I, whilst rSAP dephosphorylates excess dNTPs. 100% recovery, even for very short PCR products.

**500 rxn** - ref. GK18.0500

**2000 rxn** - ref. GK18.2000



! DNA is ready for sequencing in 15 minutes

### XPRT DNA PURIFICATION MAGNETIC BEADS

Xpert DNA Purification Magnetic Beads consists of Solid Phase Reversible Immobilization paramagnetic particles coated with carboxylic groups that selectively and reversibly bind DNA. The magnetic beads are supplied in a buffer that has been optimized in order to selectively bind DNA fragments of 100bp and larger, allowing for easy PCR clean-up, as primers, primer-dimers, dNTPs, enzymes, excess salts and other impurities can be removed quickly and efficiently in a single washing step. Moreover, Xpert DNA Magnetic Beads can also be used for NGS library prep clean-up in a similar manner.

**25 mL** - ref. GK39.0025

! Can be seamlessly integrated into NGS Library preparation workflows.

## gDNA PURIFICATION

Spin column based genomic DNA purification kits. Complete range to ensure that there is always an option available for your type of sample.

- Spin Columns
- High yield
- Fast and efficient procedure
- Proteinase K, RNase A, Lysozyme included, whenever required for the main protocol
- Adaptations available for samples other than the primary application

### GRS GENOMIC DNA KIT - BLOOD & CULTURED CELLS

For whole and frozen blood, buffy coat and cultured animal cells. Easily adaptable for bacteria and fungus.

**100 preps** - ref. GK02.0100



### GRS GENOMIC DNA KIT - TISSUE

For tissues: tail snips, liver, kidney, brain, adipose tissue, ear-punches, insects and FFPE. Easily adaptable for amniotic fluid, buccal swab, soil and stool

**100 preps** - ref. GK03.0100

### GRS GENOMIC DNA KIT - PLANT

For plant tissue and cells

100 preps - ref. GK04.0100

### GRS GENOMIC DNA KIT - BACTERIA

For Gram (+) positive and Gram (-) negative bacteria

100 preps - ref. GK07.0100

### GRS GENOMIC DNA KIT - BROADRANGE

For whole and frozen blood, serum, plasma, buffy coat, amniotic fluid, buccal swab, hair, tissue, rodent tails, ear-punches, FFPE and insect cells

100 preps - ref. GK06.0100

### GRS GENOMIC DNA KIT - CARD

For dried blot spots on Whatman® FTA® Cards

100 preps - ref. GK25.0100

### GRS GENOMIC DNA KIT - FOOD

For raw and processed food samples

100 preps - ref. GK21.0100

### GRS PURE DNA KIT

For purification and/or concentration from samples containing partial purified DNA

100 preps - ref. GK05.0100

## RNA PURIFICATION

Spin column based total RNA isolation kits. Complete range to ensure that there is always an option available for your type of sample.

- Spin Column
- High yield
- Fast and efficient procedure
- DNase I included
- Individually packed columns

### GRS TOTAL RNA KIT - BLOOD & CULTURED CELLS

For fresh whole blood and cultured animal cells

100 preps - ref. GK08.0100

### GRS TOTAL RNA KIT - TISSUE

For a wide variety of tissues and FFPE

100 preps - ref. GK09.0100

### GRS TOTAL RNA KIT - PLANT

For plant tissue and cells

100 preps - ref. GK10.0100

### GRS TOTAL RNA KIT - BACTERIA

For Gram (+) positive and Gram (-) negative bacteria

100 preps - ref. GK16.0100

### GRS TOTAL RNA KIT - YEAST & FUNGUS

For yeast and a wide variety of fungus species

100 preps - ref. GK17.0100



### GRS PURE RNA KIT

For purification and/or concentration from samples containing partial purified RNA

100 preps - ref. GK15.0100

### GRS microRNA PURIFICATION KIT

For purification of high quality miRNAs, from fresh blood, cultured cells, tissue, and FFPE

50 preps - ref. GK11.0050

### tripleXtractor DIRECTRNA KIT

Combination of the strong phenol/guanidine thiocyanate lysis capacity of tripleXtractor reagent, with a spin column system

100 preps - ref. GK23.0100

### tripleXtractor REAGENT

Monophasic phenol/guanidine thiocyanate solution for the extraction of DNA, RNA, and Proteins from the same sample, by phase separation.

100 mL - ref. GB23.0100

## DNA/RNA PURIFICATION

Spin column based kits for purification of DNA and/or RNA.

### GRS VIRAL DNA/RNA PURIFICATION KIT

For viral DNA and RNA from cell-free media (serum, plasma, body fluids and the supernatant from viral infected cell cultures)

100 preps - ref. GK12.0100

### GRS CIRCULATING CELL-FREE DNA/RNA PURIFICATION KIT

For the isolation of high quality DNA and RNA from up to 5 ml of serum or plasma)

50 preps - ref. GK20.0050

## DNA/RNA/PROTEIN PURIFICATION

Spin column based kit for the consecutive purification of DNA, RNA and protein from the same sample.

### GRS FULLSAMPLE PURIFICATION KIT

For consecutive purification of genomic DNA, total RNA (including miRNA), and total protein from whole blood and other biological fluids, animal tissues and cultured cells.

50 preps - ref. GK26.0050

## PLASMID PURIFICATION

Spin column based plasmid purification kits

### GRS PLASMID PURIFICATION KIT - MINI

Efficient and fast method for the purification of high-quality plasmid DNA from 1-6 ml of cultured bacterial cells. Eluted DNA is suitable for all common downstream applications including PCR, enzymatic restriction digestion, cloning and DNA sequencing.

100 preps - ref. GK13.0100



## ENZYMES

Highly pure enzymes, commonly used in Nucleic Acid Purification applications.

### PROTEINASE K (with buffer)

Lyophilized powder purified from *Pichia pastoris* harbouring the gene encoding endolytic protease from *Tritirachium album*. Supplied with 1 ml of a 10x concentrated storage buffer. DNase and RNase free (Activity: ~30 U/mg)

100 mg - ref. GE010.0100

1 g - ref. GE010.1000

### RNASE A

Ribonuclease A is a pancreatic endoribonuclease that specifically cleaves single-stranded RNA at the 3' end of pyrimidine residues. Lyophilized powder purified from bovine pancreas. DNase, RNase, and protease free. (Activity: ~50 Kunitz units/mg)

100 mg - ref. GE011.0100

### ZYMOLYASE® -20T

Prepared from *Arthrobacter luteus* and supplied as an ammonium sulfate precipitate of a complex of enzymes, allowing for the production of protoplasts or spheroplasts of various yeast strains.

(Lytic activity: 20.000 U/g)

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1 g - ref. GE013.0001

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### EXONUCLEASE I

Exonuclease I (Exo I) is an exonuclease that hydrolyzes single-stranded DNA, one nucleotide at a time from the extremity, in the 3' → 5' direction. It does not cleave DNA strands without terminal 3'-hydroxyl groups, nor does it degrade dsDNA.

(Activity: 20 U/μL)

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1 mL - ref. GE014.0001

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### SHRIMP ALKALINE PHOSPHATASE (rSAP)

Heat-labile multipurpose alkaline phosphatase that catalyzes the dephosphorylation of DNA, RNA and nucleotides. This recombinant enzyme replaces native SAP because it is much more stable at room temperature and is available at higher concentrations.

(Activity: 1 U/μL)

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1 mL - ref. GE015.0001

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### DNASE I SET

Incubation with the RNase-free DNase I set ensures complete DNA removal from RNA solutions as this enzyme hydrolyzes phosphodiester bonds of dsDNA, ssDNA, chromatin and DNA-RNA hybrid molecules, without compromising RNA yield and integrity.

(Concentration: 2 Kunitz units/μL)

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100 rxn - ref. GKC01.0100

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## COLUMNS

Silica-based spin columns for Nucleic Acid Purifications, which can conveniently be incorporated in your specific protocol.

### PCR PURIFICATION & GEL EXTRACTION COLUMNS

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50 units - ref. GKC.PG50

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### GENOMIC DNA MINI COLUMNS

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50 units - ref. GKC.GC50

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### gDNA PLUS MINI COLUMNS

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50 units - ref. GKC.GCP50

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### GENOMIC DNA FILTER COLUMNS

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50 units - ref. GKC.GF50

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### RNA MINI COLUMNS

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50 units - ref. GKC.RC50

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### RNA FILTER COLUMNS

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50 units - ref. GKC.RF50

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### VIRAL MINI COLUMNS

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50 units - ref. GKC.VC50

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### PLASMID PURIFICATION MINI COLUMNS

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50 units - ref. GKC.PN50

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### microRNA MINI COLUMNS

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50 units - ref. GKC.MR50

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**N** Note: Both Binding Columns And Filter Columns Are Supplied With Collection Tubes

# 03 DNA AMPLIFICATION

Routine PCR  
Fast PCR  
Demanding PCR  
High-Fidelity PCR  
Nucleotides  
Water  
qPCR  
One-Step qPCR  
Direct PCR  
PCR Plastics





## END-POINT PCR

<b>ROUTINE PCR</b>	<b>Xpert Taq</b>	Improved Taq DNA Polymerase with high yield and specificity, designed for increased PCR success rates
	<b>Xpert Fast</b>	Extreme speed on robust routine amplifications
<b>FAST PCR</b>	<b>Xpert Fast Hotstart</b>	Extreme speed on robust routine amplifications with increased specificity
	<b>Xpert Horstart</b>	Improved results on demanding amplifications (GC-rich, multiplex, etc)
<b>PCR</b>	<b>Xpert Taq Plus</b>	Amplification of very long targets, as well as complex and/or crude samples
	<b>Xpert HighFidelity</b>	Fast amplification with high-fidelity (error-rate 50× lower than Taq)
<b>HIGH-FIDELITY PCR</b>	<b>Xpert ampliFi</b>	Ultra low error-rate (100× lower than Taq) for demanding and complex target
	<b>Xpert ampliFi Hotstart</b>	Improved hotstart technology, together with an ultra low error-rate (100× lower than Taq) for the most demanding and complex targets

## qPCR

<b>INTERCALATING DYE</b>	<b>Xpert Fast SYBR</b>	Low inhibition dye technology for improved signal, as well as extreme sensitivity and speed. Also available as One-Step kit
<b>PROBE</b>	<b>Xpert Fast PROBE</b>	Highly efficient enzyme for extreme sensitivity and specificity, in both single target and multiplex qPCR. Also available as One-Step kit
<b>HRM</b>	<b>Xpert Fast HRM</b>	Ultra-sensitive HotStart enzyme for High Resolution Melt analysis as a tool for the detection of mutations and polymorphisms in dsDNA samples, including GpG methylation differences.

## DIRECT PCR

<b>GENERAL</b>	<b>Xpert directXtract</b>	Direct sample lysis (15min) as template for fast and robust PCR, on samples as: Tissue, Blood, Hair, etc. Ideal for mouse genotyping
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**I IMPORTANT:** GRiSP recommends following our protocol guidelines at all times. Most of our enzymes are not regular options, and will not work as well if other protocols are used.

## ROUTINE PCR

Robust and efficient Taq DNA polymerase for routine applications.

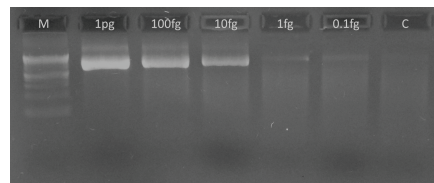
### XPert TAQ

Xpert Taq DNA polymerase is a robust enzyme, ideal for daily applications like genotyping and screening, amplifying with efficiency and consistency. Xpert Taq has 5'-3' exonuclease activity, but no 3'-5' exonuclease (proofreading) activity. It is the ideal choice for consistent results in routine PCR amplifications.

**500 U** - ref. GE10.0500  
**2500 U** - ref. GE10.2500

dNTPs included in the buffer

- Amplicon size: up to 5 kb
- Extension Rate: 2 kb/min
- Hotstart: No
- A-overhang: Yes



Amplification of a ~1kb DNA fragment inserted in a 3kb plasmid. Serial dilution of purified plasmid.

## FAST PCR

Based on the enhanced characteristics of Xpert Fast DNA Polymerase, it is now possible to perform amplifications with extreme sensitivity and speed, saving precious time, without compromising performance.

### XPert FAST

Robust enzyme, ideal for amplifying with extreme speed, yield and consistency. Even better amplification can be achieved in a much shorter time when compared to conventional Taq DNA polymerases.

**500 U** - ref. GE05.0500

**2500 U** - ref. GE05.2500

dNTPs included in the buffer

**1 mL** - ref. GE12.0001

**5x 1 mL** - ref. GE12.5001

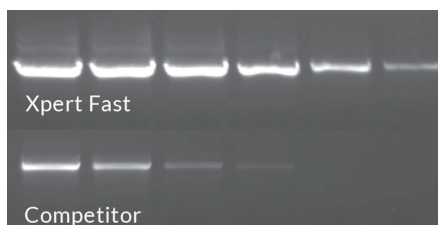
Mastermix

**1 mL** - ref. GE15.0001

**5x 1 mL** - ref. GE15.5001

Mastermix with dye

- Amplicon size: up to 5 kb
- Extension Rate: 2 sec/kb
- Hotstart: No
- A-overhang: Yes



Amplification under fast conditions; Xpert Fast vs competitor fast enzyme.

### XPert FAST HOTSTART

Robust enzyme, suitable for the amplification of difficult targets with extreme speed, yield and specificity. The optimized buffer composition makes the enzyme particularly resistant to inhibitors, and thus suitable for direct PCR of unpurified samples and fast complex PCR amplifications.

**250 U** - ref. GE25.0250

dNTPs included in the buffer

**1 mL** - ref. GE35.0001

**5x 1 mL** - ref. GE35.5001

Mastermix

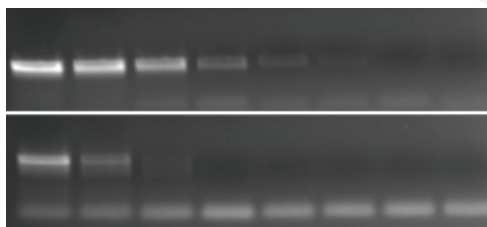
**1 mL** - ref. GE45.0001

**5x 1 mL** - ref. GE45.5001

**50x 1 mL** - ref. GE45.0050

Mastermix with dye

- Amplicon size: up to 5 kb
- Extension Rate: 2 sec/kb
- Hotstart: Yes
- A-overhang: Yes



Top: Xpert Fast Hotstart mastermix; Bottom: competitor fast hotstart enzyme

## DEMANDING PCR

Improved performance DNA polymerases specially suited for demanding applications, when regular Taq is not sufficient.

### XPert HOTSTART

Chemically modified hotstart Taq DNA polymerase with enhanced amplification efficiency, enabling higher specificity, increased sensitivity and greater yield, as compared to standard Taq DNA polymerases. The ideal choice for demanding GC-rich and multiplex amplifications.

**500 U** - ref. GE48.0500

**2500 U** - ref. GE48.2500

**1.25 mL** - ref. GE18.0100

**5x 1.25 mL** - ref. GE18.5100

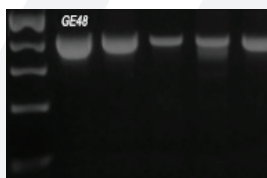
Mastermix

**1.25 mL** - ref. GE28.0100

**5x 1.25 mL** - ref. GE28.5100

Mastermix with dye

- Amplicon size: up to 5 kb
- Extension Rate: 2 kb/min
- Hotstart: Yes (chemical)
- A-overhang: Yes



Amplification comparison versus four competitors with different hotstart methods.

### XPERT TAQ PLUS HOTSTART

Enhanced DNA polymerase with superior PCR performance when it comes to the amplification of long fragments. Also recommended for other difficult templates such as mammalian genomic DNA and GC/AT-rich targets.

**250 U** - ref. GE09.0250

dNTPs included in the buffer

**1 mL** - ref. GE19.0001

**5x 1 mL** - ref. GE19.5001

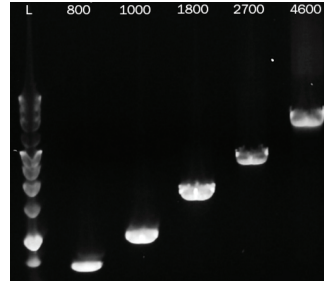
Mastermix

**1 mL** - ref. GE29.0001

**5x 1 mL** - ref. GE29.5001

Mastermix with dye

- Amplicon size: up to 10 kb
- Extension Rate: 1-4 kb/min
- Hotstart: Yes
- A-overhang: Yes



Amplification of DNA fragments of different sites, with high yield and specificity.

## HIGH-FIDELITY PCR

Enhanced enzymes for extremely high fidelity, for when error introduction during PCR is a problem and regular polymerases are just not good enough.

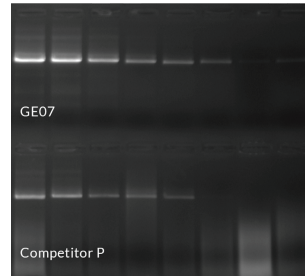
### XPERT HIGHFIDELITY

Robust enzyme with enhanced DNA binding, resulting in improved processivity, yield and low-error rate.

**250 U** - ref. GE07.0250

dNTPs included in the buffer

- Amplicon size: up to 10 kb
- Extension Rate: 2 kb/min
- Hotstart: No
- A-overhang: No
- Error-rate: 50x lower than Taq



Amplification of a 5 kb target. Top: Xpert HighFidelity; Bottom: competitor P

### XPERT AMPLIFI

DNA polymerase with extreme performance in complex templates, including GC/AT-rich sequences. Very high amplification success rate, across a wide range of challenging templates, along with industry leading error-rate.

Suitable for long PCR, amplification of methylated DNA, site-directed mutagenesis and NGS.

**100 U** - ref. GE17.0100

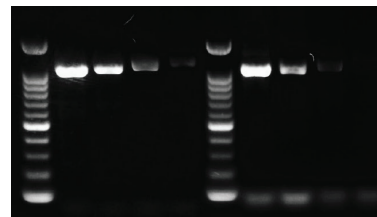
dNTPs included in the buffer

**1.25 mL** - ref. GE27.0100

**5x 1.25 mL** - GE27.5100

Mastermix

- Amplicon size: up to 20 kb
- Extension Rate: 2-6 kb/min
- Hotstart: No
- A-overhang: No
- Error-rate: 100x lower than Taq



Amplification of a 1kb target (51% GC). Left Xpert AmpliFi; Right: competitor K

## XPert AMPLIFI HOTSTART

The new paradigm of superior performance of this enzyme, including a new reversible hotstart method, results in extreme specificity, sensitivity and yield, with no significant primer-dimer formation. Achieving excellent results, including high-fidelity amplification on demanding and long templates, is now possible.

**100 U** - ref. GE37.0100

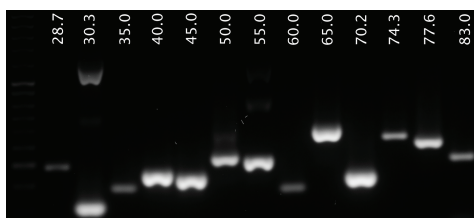
dNTPs included in the buffer

**1.25 mL** - ref. GE47.0100

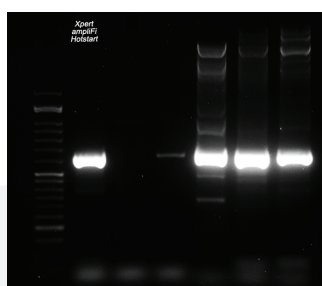
**5x 1.25 mL** - ref. GE47.5100

Mastermix

- Amplicon size: up to 20 kb
- Extension Rate: 2-6 kb/min
- Hotstart: Yes (reversible)
- A-overhang: No
- Error-rate: 100x lower than Taq



Successful amplification across a wide range of GC content, using Xpert AmpliFi hotstart.



Amplification comparison of a 71% GC content gene, using Xpert AmpliFi hotstart (left lane) and several competitors

## NUCLEOTIDES

Highly pure (>99%) dNTPs, free of endonucleases, exonucleases, RNase, and phosphatase activity.

### GRS dNTP MIX

Aqueous solution of equimolar amounts (10mM each) of dATP, dCTP, dGTP, and dTTP at pH 7.0

**1 mL** - ref. GP010.0001

**5x 1 mL** - ref. GP010.0501

### GRS dNTP SET

100mM aqueous solutions of dATP, dCTP, dGTP, and dTTP at pH 7.0

**4x 0.25 mL** - ref. GP011.0411

## WATER

Ultrapure water, free of DNases, RNases, Phosphatases and Nucleic Acids.

Not DEPC treated.

### GRS PCR GRADE WATER

Quality tested, ultrapure water suitable for all molecular biology applications, including PCR, RT-PCR, and realtime PCR. GRS PCR grade water is prepared by a purification process that does not use chemical compounds such as DEPC.

**10x 1 mL** - ref. GW010.1001

**1 L** - ref. GW010.1000

# qPCR

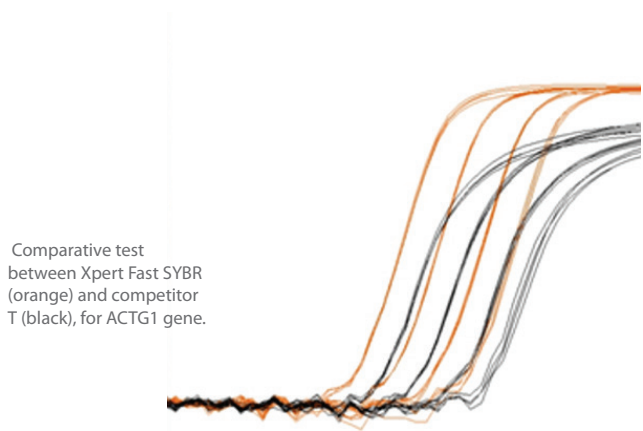
Industry leading qPCR enzymes for both probe-based and intercalating dye-based assays, for highly sensitive and accurate results, under fast conditions.

## XPERT FAST SYBR

Combination of a highly efficient hotstart enzyme with a novel low inhibition technology. Extreme sensitivity and specificity is achieved, as a result of the little to no inhibition often caused by the intercalating dye.

**APPLICATIONS:**

- Absolute quantification
- Gene Expression Analysis
- High-throughput PCR
- Low-copy number target gene detection



- 1 mL - ref. GE20.0100
- 5x 1 mL - ref. GE20.5100
- 25x 1 mL - ref. GE20.2501

Universal

- 1 mL - ref. GE21.0100
- 5x 1 mL - ref. GE21.5100
- 25x 1 mL - ref. GE21.2501

Fluorescein

- 1 mL - ref. GE22.0100
- 5x 1 mL - ref. GE22.5100
- 25x 1 mL - ref. GE22.2501

BLUE Universal

Early Ct values  
 Extreme sensitivity  
 Excellent signal  
 Convenient 1 mL aliquots for reduced contamination risk



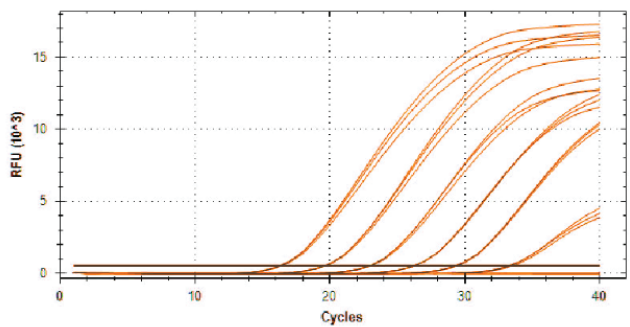
Available as BLUE version for visual pippeting aid

## XPERT FAST PROBE

Highly efficient hotstart enzyme optimized for prevention of primer-dimer formation, and allowing for extremely high sensitivity and specificity, both with singleplex and multiplex applications. Compatible with all common probe-based qPCR assays.

**APPLICATIONS:**

- Absolute quantification
- Gene Expression Analysis
- Multiplex and singleplex applications
- Low-copy number target gene detection



- 1 mL - ref. GE30.0100
- 5x 1 mL - ref. GE30.5100
- 25x 1 mL - ref. GE30.2501

Universal

- 1 mL - ref. GE32.0100
- 5x 1 mL - ref. GE32.5100
- 25x 1 mL - ref. GE32.2501

BLUE Universal

Highly efficient multiplex  
 Extreme sensitivity  
 Efficient amplification of GC/AT-rich sequences  
 Convenient 1 mL aliquots for reduced contamination risk



Available as BLUE version for visual pippeting aid

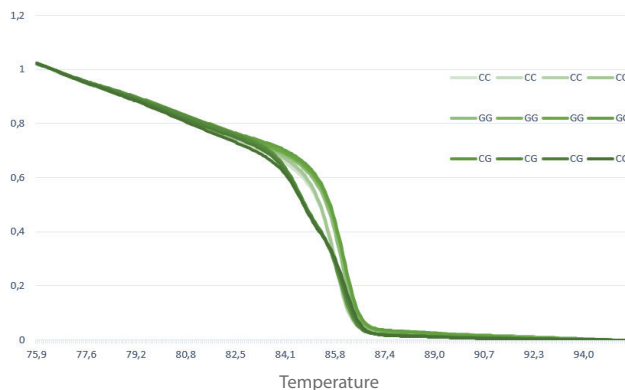
### XPERT FAST HRM

High Resolution Melt (HRM) analysis is a powerful tool for the detection of mutations and polymorphisms in dsDNA samples, including GpG methylation differences. Xpert Fast HRM contains all components, except specific primers and template, for HRM analysis in qPCR. It consists of the combination of a highly efficient hotstart enzyme with an optimized buffer system, which allows for efficient amplification of GC-rich and AT-rich templates under both normal and fast qPCR conditions. The intercalating dye used in this mastermix causes no inhibition of the PCR reaction thus allowing for extremely high sensitivity and specificity, as well as preventing the formation of unwanted primer-dimers and non-specific products.

**APPLICATIONS:**

- SNP Genotyping
- CpG methylation Analysis

- 1 mL - ref. GE70.0100
- 5x 1 mL - ref. GE70.5100
- 25x 1 mL - ref. GE70.2501



C/G SNP detection of C3 gene using Xpert Fast HRM

Excellent signal with low PCR inhibition  
 Ultra-sensitive melt profiles  
 Antibody-mediated Hotstart technology for improved specificity  
 Allows for standard and fast cycling

## ONE-STEP qPCR

One-Step qPCR adds convenience and reduces contamination risk to the widely used qPCR technique, bringing extra advantages on sensitive applications.

### XPERT ONE-STEP FAST SYBR

First-strand cDNA synthesis and subsequent qPCR in a single-tube reaction procedure, decreasing contamination risk and reducing hands-on time considerably. Developed for extremely sensitive and fast reactions with low inhibition, on intercalating dye applications.

- Thermostable RTase included
- Extreme sensitivity
- Excellent signal
- Convenient aliquots for reduced contamination risk

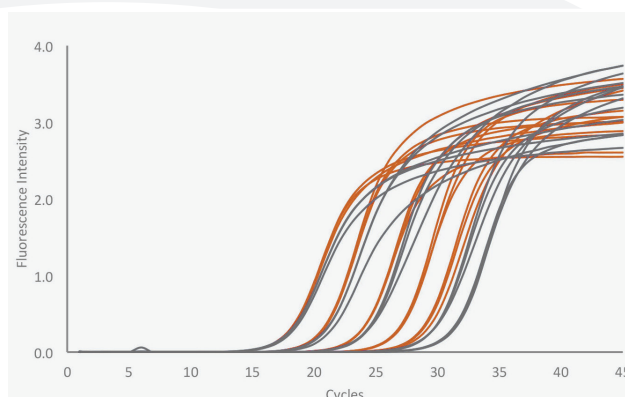
- 100 rxn - ref. GE40.0100
- 5x 100 rxn - ref. GE40.5100

### XPERT ONE-STEP FAST PROBE

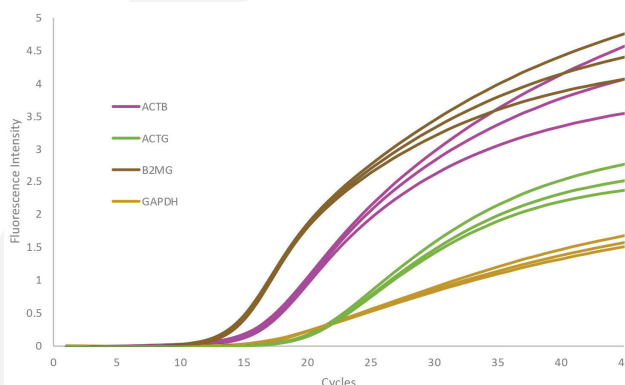
First-strand cDNA synthesis and subsequent qPCR in a single-tube reaction procedure, decreasing contamination risk and reducing hands-on time considerably. Developed for fast results with early Ct values and extreme sensitivity, on probe-based applications.

- Thermostable RTase included
- Extreme sensitivity
- High efficiency in multiplex applications
- Convenient aliquots for reduced contamination risk

- 100 rxn - ref. GE50.0100
- 5x 100 rxn - ref. GE50.5100



Comparative test between Xpert One-Step Fast SYBR (orange) and competitor B (black), for ACTG1 gene dilutions.



Multiplex amplification of four genes, using One-Step Fast Probe.

## DIRECT PCR

Accompanying the growing need for fast and efficient methods for detection, direct PCR allows for the amplification of DNA from crude sample extracts, with no purification steps, without any quality compromise.

### XPert DIRECTXTRACT PCR KIT

Convenient and easy-to-use combination of a simple and efficient DNA extraction method with direct amplification using Xpert Fast hotstart mastermix (#GE45).

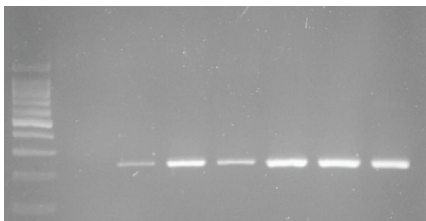
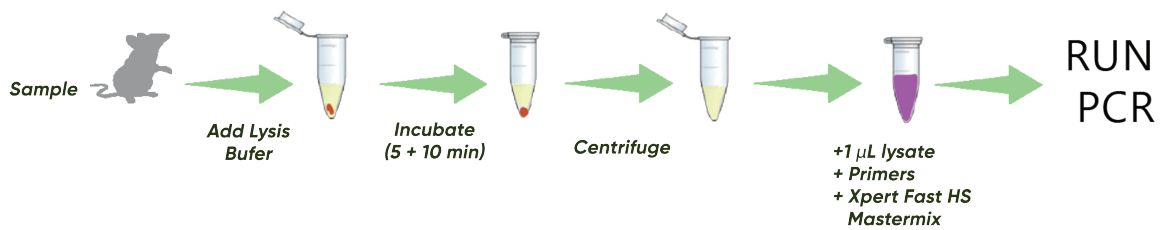
**80 rxn** - ref. GE60.0080  
**480 rxn** - ref. GE60.0480  
**1200 rxn** - ref. GE60.1200

Lysis and Amplification

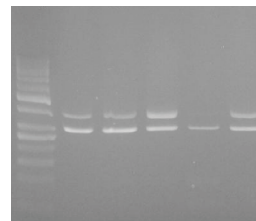
**80 rxn** - ref. GE61.0080  
**400 rxn** - ref. GE61.0400

Lysis only

- Total procedure time: ~1h
- Suitable for a wide variety of samples, including whole blood, mouse tails, FTA-cards, and FFPE tissue
- Ideal for genotyping and screening applications






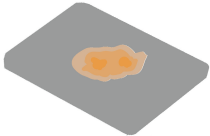




Effect of lysate dilution on amplification results. Left to right: ladder, control, on, 10 dilution, 5x dilution, 2x dilution, undiluted)



Genotyping showing homozygote (lane 4). PCR performed in 1 hour (fast conditions); Gel run in 15 minutes (250V) using SGTB Electrophoresis Buffer



## RECOMMENDED QUANTITIES FOR 100 mL EXTRACTIONS:

	Mouse tail	1 to 2 mm (approx 5 mg)
	Ear punch	2 to 4 mm <sup>2</sup> (approx 5 mg)
	Animal tissue	3 to 30 mg
	FFPE tissue	1 mm <sup>3</sup> (or 2 mm <sup>2</sup> of a 10 μm section)
	Buccal swab	1 swab
	Blood (mammalian)	2 to 8 μL of fresh blood (with EDTA as anti-coagulant)
	FTA / guthrie card	2 mm <sup>2</sup>
	Hair follicles	1 to 10 follicles

## PCR PLASTICS

High quality, european made, plasticware for PCR and qPCR applications. Functionally QC tested, free of nucleases, human gDNA and endotoxins.

### TUBES

GRS Individual 0.2 mL PCR tubes (flat cap)	1000 Units	GPP01.1000
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### STRIPS

GRS PCR Strips 0.2 mL (attached flat caps)	120 Strips	GPP02.0120
GRS PCR Strips 0.1 mL (attached flat caps)	120 Strips	GPP03.0120
GRS PCR Strips of 0.2 mL Tubes + Strips of flat caps	120 Strips	GPP04.0120
GRS PCR Strips of 4 Tubes with caps (for ROTOR-GENE®)	250 Tubes + Caps	GPP14.0250



### CAPS

GRS 8-Strips of flat caps	125 Strips	GPP12.0125
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### OTHERS

GRS Roll for adhesive seals	1 Unit	GPP15.0001
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**PLATES**

GRS 96w PCR Plates (non-skirted)	50 Plates	GPP05.0050	
GRS 96w PCR Plates (half-skirted)	50 Plates	GPP06.0050	
GRS 96w PCR Plates (half-skirted) white	50 Plates	GPP07.0050	
GRS 96w PCR Plates (full-skirted)	50 Plates	GPP08.0050	
GRS 96w PCR Plates (full-skirted) white	50 Plates	GPP09.0050	
GRS 384w PCR Plates (full-skirted)	50 Plates	GPP17.0050	
GRS 0.1 ml Fast PCR Plates (half-skirted)	50 Plates	GPP16.0050	
GRS 96w PCR Plates (half-skirted) (Low Profile - for LC480)	50 Plates	GPP13.0050	
GRS 96w PCR Plates 0.1 mL (non-skirted)	50 Plates	GPP27.0050	
GRS 96w PCR Plates 0.1 mL (white) (for CFX/StepOne/LC)	50 Plates	GPP26.0050	

**SEALS**

GRS PCR Seals	100 Seals	GPP10.0100	
GRS qPCR Seals	100 Seals	GPP41.0100	

# 04 RNA RESEARCH

cDNA Synthesis  
Storage & Decontamination



## cDNA SYNTHESIS

Engineered reverse transcriptase enzymes with extreme performance: high temperature stability, no RNase H activity and capable of preparing full-length cDNAs. Ideal for achieving consistent results, even for demanding samples.

### XPERT cDNA SYNTHESIS KIT

Kit version, containing all necessary components for high performance cDNA synthesis applications (including GRiSP's high performance Xpert RTase), in separate vials. Oligo(dT)20 and random hexamer primers included.

**Ideal option for a versatile utilization.**

100 rxn - ref. GK80.0100

Performance of Xpert RTase versus competitor products (A and B) on both 8 kb and 2 kb templates

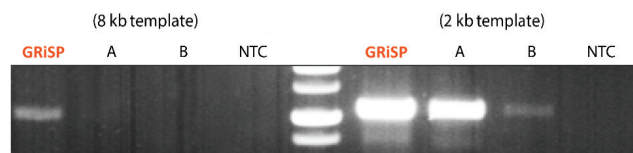
### XPERT cDNA SYNTHESIS SUPERMIX

Convenient supermix format containing all necessary components for high performance cDNA synthesis, in an optimized mastermix format, including Oligo(dT)20 and random hexamer primers, as well as the high performance Xpert RTase.

Thermostable up to 72 °C

**Ideal option for an optimized performance with extended assurance.**

100 rxn - ref. GK86.0100



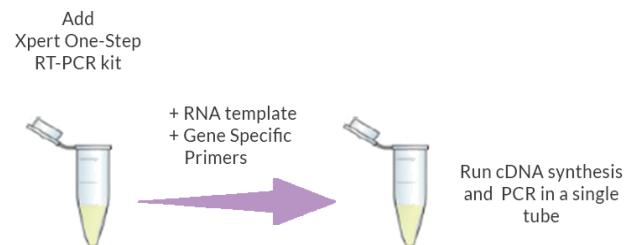
! Removal of contaminating gDNA from the sample is included.

### XPERT ONE-STEP RT-PCR KIT

Consisting of a RTase mix and a Fast PCR Mastermix, the Xpert One-Step RT PCR Kit can be used with any RNA template, including mRNA, viral RNA and total RNA, as the RTase is not inhibited by rRNA or tRNA. This kit provides a robust RT-PCR performance that requires minimal to no optimization.

The RTase mix comprises a genetically modified thermostable MMLV reverse transcriptase with improved synthesis efficiency, and an advanced RNase inhibitor to impede RNA degradation. The Fast PCR Mastermix contains all other required components, including a fast hotstart DNA polymerase for improved speed, sensitivity and specificity.

100 rxn - ref. GK64.0100



### RNASE INHIBITOR (40 U/μL)

RNase Inhibitor specifically inhibits common RNases, including RNase A, RNase B and RNase C. As the RNase inhibitor does not interfere with DNA polymerase activity, it is an extremely useful additive in PCR and RT-PCR.

GRiSP's RNase Inhibitor is a sturdy enzyme with improved resistance to oxidation, being stable under very low concentrations (<1mM) of DTT.

100 μl - ref. GE85.0100

## STORAGE & DECONTAMINATION

Solutions for storing RNA and for decontamination of work material.

### RNA STAND-BY SOLUTION

Aqueous solution that inactivates RNases and preserves cellular RNA of intact fresh tissues or cells. Does not jeopardize quality nor quantity of RNA to be isolated subsequently, whether the sample is stored frozen or not.

Perfect for tissue collection and storage.

RNA is stable for up to 1 day when stored at 37°C, up to 1 week at room temperature, and up to 1 month in a normal refrigerator. For long term, samples should be stored frozen at -20°C to -80°C.

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**100 mL** - ref. GB33.0100

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### RNASE XTERMINATOR SPRAY

Ready-to-use solution, supplied in an easy-to-use Spray Bottle, for eliminating RNase, DNase and other enzymes, as well as DNA contamination, from laboratory surfaces and material. Simply spray on the contaminated area and wipe away from the surface using ultrapure water.

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**500 mL Spray** - ref. GB43.500S

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# 05 CULTURE MEDIA

Auto-Induction Media  
Standard Media  
Media Components





## AUTO-INDUCTION MEDIA

Dehydrated powders, supplemented with glucose and alpha lactose, for the induction of protein expression under the control of IPTG-inducible promoters in E.coli.

### No cell density monitoring needed

Induction will start automatically at high cell density

### Automatic induction of protein expression

No need to add IPTG (already included in the medium)

### Saves money, time and work

Saves money (no IPTG needed); saves time and work as there is no need to monitor the culture and take samples

**N** With Auto-Induction Media, instead of the laborious monitoring of cell density, researchers can inoculate and leave the culture as is, knowing that expression will start at high cell density, automatically. There is no need to monitor the cell density and there is no conventional induction with IPTG.

Each medium contains 0.5g Glucose, 2g alpha-lactose, 0.15g MgSO<sub>4</sub>, 3.3g (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 7.1g Na<sub>2</sub>HPO<sub>4</sub>, 6.8g KH<sub>2</sub>PO<sub>4</sub> per L

### LB BROTH (AIM)

Tryptone: 10g/L | Yeast Extract: 5g/L

500 g - ref. GCM17.0500

### 2× YT BROTH (AIM)

Tryptone: 16g/L | Yeast Extract: 10g/L

500 g - ref. GCM18.0500

### TERRIFIC BROTH (AIM)

Tryptone: 12g/L | Yeast Extract: 24g/L

500 g - ref. GCM19.0500

### SUPER BROTH (AIM)

Tryptone: 35g/L | Yeast Extract: 20g/L

500 g - ref. GCM20.0500

## STANDARD MEDIA

Dehydrated powder for the preparation of broth or agar plates, for the growth of bacteria or yeast in molecular biology applications.

### LB AGAR (LENNOX)

Tryptone: 10g/L | Yeast Extract: 5g/L | NaCl: 5g/L | Bacteriological Agar: 15g/L

500 g - ref. GCM01.0500

### LB BROTH (LENNOX)

Tryptone: 10g/L | Yeast Extract: 5g/L | NaCl: 5g/L

500 g - ref. GCM02.0500

### LURIA AGAR (MILLER'S LB AGAR)

Tryptone: 10g/L | Yeast Extract: 5g/L | NaCl: 10g/L | Bacteriological Agar: 15g/L

500 g - ref. GCM03.0500

### LURIA BROTH (MILLER'S LB BROTH)

Tryptone: 10g/L | Yeast Extract: 5g/L | NaCl: 10g/L

500 g - ref. GCM04.0500

### LURIA AGAR (MILLER'S MODIFICATION)

Tryptone: 10g/L | Yeast Extract: 5g/L | NaCl: 0.5g/L | Bacteriological Agar: 15g/L

500 g - ref. GCM05.0500

### LURIA BROTH (MILLER'S MODIFICATION)

Tryptone: 10g/L | Yeast Extract: 5g/L | NaCl: 0.5g/L

500 g - ref. GCM06.0500

### TERRIFIC BROTH

Tryptone: 12g/L | Yeast Extract: 24g/L | K<sub>2</sub>HPO<sub>4</sub>:12.54g/L | KH<sub>2</sub>PO<sub>4</sub>: 2.31g/L

500 g - ref. GCM07.0500

### MODIFIED TERRIFIC BROTH

Tryptone: 12g/L | Yeast Extract: 24g/L | K<sub>2</sub>HPO<sub>4</sub>:9.4g/L | KH<sub>2</sub>PO<sub>4</sub>: 2.2g/L

500 g - ref. GCM08.0500

**2x YT MEDIUM**

Tryptone: 16g/L | Yeast Extract: 10g/L | NaCl: 5g/L

500 g - ref. GCM09.0500

**2x YT AGAR**

Tryptone: 16g/L | Yeast Extract: 10g/L | NaCl: 5g/L | Bacteriological Agar: 15g/L

500 g - ref. GCM10.0500

**SOB MEDIUM**

Tryptone: 20g/L | Yeast Extract: 5g/L | NaCl: 0.5g/L | MgCl<sub>2</sub>: 0.96g/L | KCl: 0.186g/L

500 g - ref. GCM11.0500

**SOC MEDIUM**

Tryptone: 20g/L | Yeast Extract: 5g/L | NaCl: 0.5g/L | MgCl<sub>2</sub>: 0.96g/L  
Glucose: 3.60g/L | KCl: 0.186g/L

500 g - ref. GCM12.0500

**YPD BROTH**

Peptone: 20g/L | Yeast Extract: 10g/L | Dextrose: 20g/L

500 g - ref. GCM13.0500

**YPD AGAR**

Peptone: 20g/L | Yeast Extract: 10g/L | Dextrose: 20g/L | Bacteriological Agar: 15g/L

500 g - ref. GCM14.0500

**YNB WITHOUT AMINO ACIDS AND WITHOUT AMMONIUM SULFATE**

YNB: 1.7g/L

500 g - ref. GCM15.0500

**YNB WITHOUT AMINO ACIDS AND WITH AMMONIUM SULFATE**

YNB: 1.7g/L | Ammonium Sulfate: 5g/L

500 g - ref. GCM16.0500

## MEDIA COMPONENTS

Components for the preparation of commonly used culture media in molecular biology applications.

**PEPTONE**

Pancreatic digest of casein and as such composed of a balanced mixture of amino acids, including essential amino acids and low molecular weight peptides.

500 g - ref. GCM21.0500

**BACTERIOLOGICAL PEPTONE**

Product of an enzymatic digestion of animal tissues, and as such composed of a mixture of amino acids, including essential amino acids, and low molecular weight peptides.

500 g - ref. GCM22.0500

**TRYPTONE**

Pancreatic digest of casein and as such composed of a mixture of amino acids, including essential amino acids and larger peptides.

500 g - ref. GCM23.0500

**YEAST EXTRACT**

Dehydrated water-soluble fraction of autolyzed *Saccharomyces cerevisiae*.

500 g - ref. GCM24.0500

**BACTERIOLOGICAL AGAR**

Mixture of linear polysaccharide agarose and agaropectin molecules, that serves as a gelling agent for the preparation of solid culture media and other microbiological applications.

500 g - ref. GCM25.0500

**DEXTROSE**

D-Glucose derived from corn. Free from starches, all other sugars, proteins, alcohols and heavy metals.

500 g - ref. GCM26.0500

**SUCROSE**

Disaccharide composed of glucose and fructose.

500 g - ref. GCM27.0500

# 06 PROTEIN RESEARCH

Protein Electrophoresis  
Protease Inhibitors  
Detection  
Protein Markers  
Staining & Stripping



## PROTEIN ELECTROPHORESIS

High purity solutions and reagents for the preparation of polyacrylamide gels for protein electrophoresis.

### ACRYLAMIDE/BISACRYLAMIDE SOLUTION (19:1)

The concentration of this product (30% or 40%) is determined by the total (T) weight of both acrylamide and bisacrylamide (T= 30g or T=40g, per 100ml), in which the mix ratio is 19:1 resulting in a cross-linking (C) of 5%.  
A ratio of 19:1 is suitable for the separation of small peptides.

**500 mL (30%)** - ref. GB16.3019  
**500 mL (40%)** - ref. GB16.4019

### ACRYLAMIDE/BISACRYLAMIDE SOLUTION (29:1)

The concentration of this product (30% or 40%) is determined by the total (T) weight of both acrylamide and bisacrylamide (T= 30g or T=40g, per 100ml), in which the mix ratio is 29:1 resulting in a cross-linking (C) of 3.3%.  
A ratio of 29:1 is commonly used for the separation of "normal sized" proteins.

**500 mL (30%)** - ref. GB16.3029  
**500 mL (40%)** - ref. GB16.4029

### ACRYLAMIDE/BISACRYLAMIDE SOLUTION (37.5:1)

The concentration of this product (30% or 40%) is determined by the total (T) weight of both acrylamide and bisacrylamide (T= 30g or T=40g, per 100ml), in which the mix ratio is 37.5:1 resulting in a cross-linking (C) of 2.7%.  
A ratio of 37.5:1 is used for separating high molecular weight proteins.

**500 mL (30%)** - ref. GB16.3037  
**500 mL (40%)** - ref. GB16.4037

### APS (AMMONIUM PERSULPHATE)

Commonly used reagent for the preparation of polyacrylamide gels for electrophoresis. In aqueous solutions APS forms oxygen free radicals, which initiate the polymerization of acrylamide and bisacrylamide to form a gel matrix.

**25 g** - ref. GS20.0025

### TEMED

N,N,N',N'-tetramethylethane-1,2-diamine is a commonly used catalyst, together with APS (ammonium persulphate), for the preparation of polyacrylamide gels for electrophoresis.

**25 mL** - ref. GS21.0025

### TG BUFFER (10X)

TG Buffer (10X) is an aqueous solutions of 0.25M Tris and 1.92M glycine, prepared with ultrapure water and 0.2 µm filtered.

**1 L** - ref. GB13.0110  
**5 L** - ref. GB13.0510

### TGS BUFFER (10X)

TGS Buffer (10X) is an aqueous solutions of 0.25M Tris, 1.92M glycine and 1% SDS, prepared with ultrapure water and 0.2 µm filtered.

**1 L** - ref. GB15.0110  
**5 L** - ref. GB15.0510

### SDS SOLUTION

Aqueous solutions of ultrapure sodium dodecyl sulfate, prepared with ultrapure water, 0.2 µm filtered and suitable for usage in polyacrylamide gel electrophoresis of protein, disruption of cell walls and dissociation of nucleic acid-protein complexes.

**1 L (10%)** - ref. GB14.0110  
**1 L (20%)** - ref. GB14.0120

## PROTEASE INHIBITORS

Mix of several compounds that inhibit protease activity, used to protect against undesired protein digestion during and after cell lysis.

### GRS PROTEASE INHIBITOR COCKTAIL (with EDTA)

Comprises 100mM PMSF, 2mM Bestatin, 0.3mM Pepstatin A, 0.3mM E-64 and 100mM EDTA, dissolved in DMSO containing a small amount of deionized water.

**1 mL** - ref. GPI01.0001

### GRS PROTEASE INHIBITOR COCKTAIL

Comprises 100mM PMSF, 2mM Bestatin, 0.3mM Pepstatin A 0.3mM E-64, dissolved in DMSO containing a small amount of deionized water.

**1 mL** - ref. GPI02.0001

# DETECTION

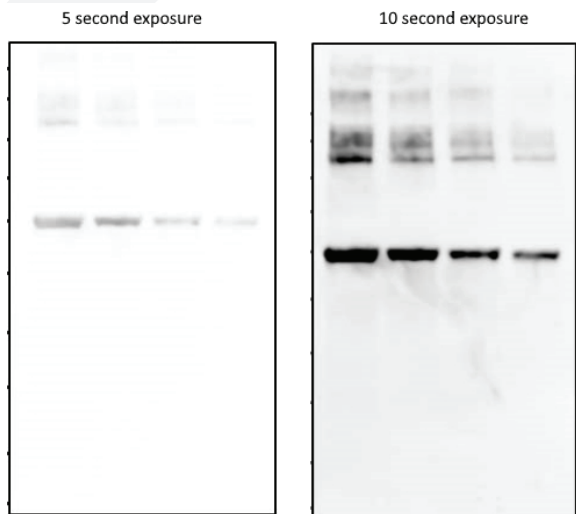
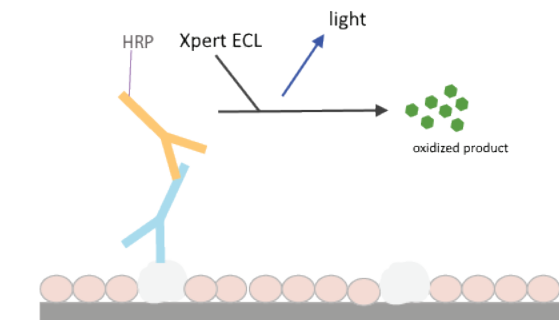
The choice of an appropriate substrate for Western blotting assays depends on the required sensitivity, sample and target proteins abundance, antibody availability, reporter enzyme and the detection system.

## XPert ECL

Xpert ECL (Enhanced ChemiLuminescent) is an enhanced luminol-based substrate for horseradish peroxidase (HRP) in chemiluminescent Western blotting assays. It allows for the detection of low picogram amounts of HRP-conjugated antibodies, with long lasting signals (several hours), which makes it possible to reduce exposure time and to use less precious sample or less antibody, and thus saving money.

100 mL - ref. GD32.0100

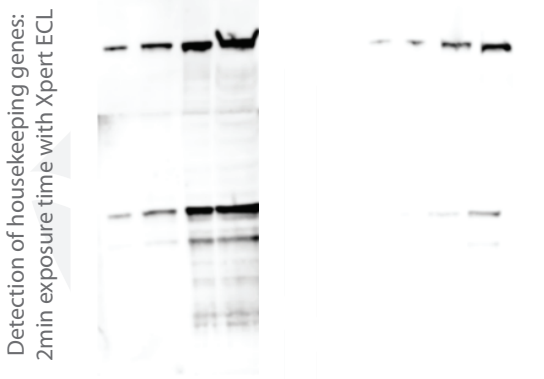
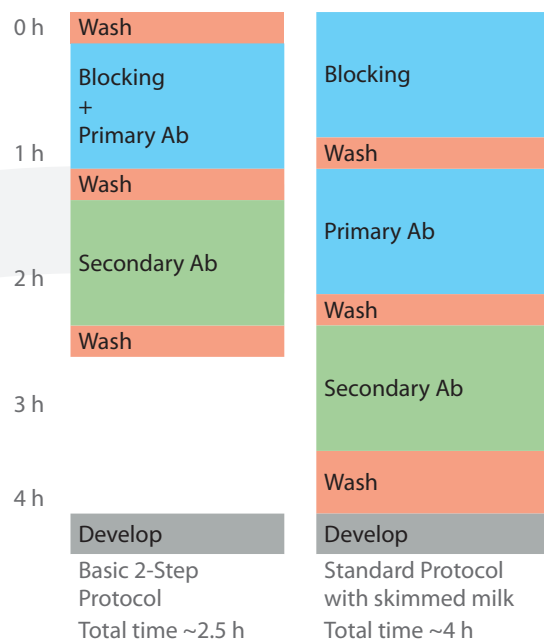
- ! Highly Sensitive / Low picogram detection
- Prolonged chemiluminescent signal
- Compatible with Nitrocellulose and PVDF membranes
- Compatible with X-ray film and CCD imager



## XPert ENHANCER BLOCKING SOLUTION

Xpert Enhancer Blocking Solution is a 2-in-1 Buffer for Western Blotting; not only can membrane blocking and antibody hybridization be carried out in a single-step, saving considerable amounts of time, the buffer also enhances the signal developed with either HRP (horseradish peroxidase) or AP (alkaline phosphatase) substrates.

500 mL - ref. GS25.0500



- ! Ready-to-Use
- Protein-free blocking solution
- Simultaneous blocking and antibody binding
- Enhanced antibody signal
- Time-Saving
- Compatible with Nitrocellulose and PVDF membranes
- Compatible with any substrate for HRP and AP

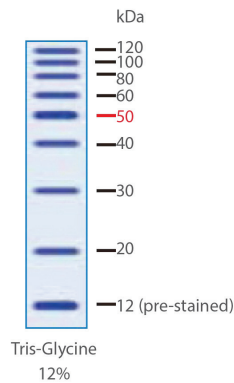
## PROTEIN MARKERS

Set of unstained and pre-stained ready-to-use protein markers for SDS-PAGE and Western Blotting. Recommended loading of 3-5  $\mu\text{L}$  for protein electrophoresis.

### GRS UNSTAINED PROTEIN MARKER

This marker is composed of 8 unstained proteins and 1 pre-stained protein (blue) for monitoring of electrophoresis and verification of transfer efficiency of Western Blotting onto membrane (compatible with PVDF, nylon and nitrocellulose). The unstained proteins range from 20kDa to 120kDa, whereas the pre-stained protein co-migrates with proteins of approximately 12kDa (depending on the SDS-PAGE conditions). For easy identification of each band, the 50kDa band has double intensity to serve as an internal reference.

2x 250  $\mu\text{L}$  - ref. GLP10.0500

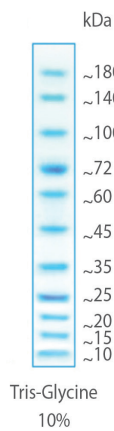


### GRS PROTEIN MARKER BLUE

Ready-to-use pre-stained protein marker suitable for monitoring protein separation during SDS-PAGE, verification of Western Blotting Transfer Efficiency onto membranes and for estimation of the molecular weight of proteins and/or polypeptides in the range of 10-180kDa.

The GRS Protein Marker Blue is composed of 11 blue bands, including 2 reference bands with more intense colour for easy identification (~25kDa and ~72kDa).

500  $\mu\text{L}$  - ref. GLP02.0500

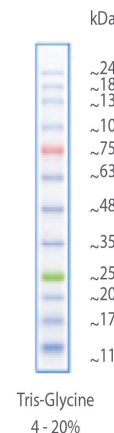


### GRS PROTEIN MARKER MULTICOLOUR

Ready-to-use pre-stained protein marker suitable for monitoring protein separation during SDS-PAGE, verification of Western Blotting Transfer Efficiency onto membranes, and for estimation of the molecular weight of proteins and/or polypeptides in the range of 10-250kDa.

The GRS Protein Marker Multicolour is composed of 12 bands: 10 blue bands and 2 reference bands with different colours for easy identification (one red band (~25kDa) and one green band (~75kDa)).

500  $\mu\text{L}$  - ref. GLP01.0500

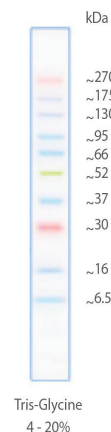


### GRS PROTEIN MARKER MULTICOLOUR PLUS

Ready-to-use three-colour protein standard suitable for monitoring protein separation during SDS-PAGE, size determination of proteins, and verification of transfer efficiency of Western Blotting onto membrane (compatible with PVDF, nylon and nitrocellulose). This marker is composed of 10 pre-stained proteins ranging from 6.5kDa to 270kDa.

For easy identification of each band, it includes three reference bands of different colours that co-migrate with proteins of 30kDa (red), 52kDa (green) and 270kDa (red), respectively, when separated by 4-20% gradient SDS-PAGE using TGS Buffer.

500  $\mu\text{L}$  - ref. GLP03.0500





## STAINING & STRIPPING

High purity solutions for staining and for antibody stripping applications.

### GRS STRIPPING SOLUTION

Designed for removing antibodies from developed membranes after Western Blotting, allowing for multiple detection with other sets of antibodies (reprobing). The solution does not contain DTT or  $\beta$ -mercaptoethanol, thus leaving disulfide bridges intact

500 mL - ref. GB20.0500

### PONCEAU S SOLUTION

Allows for the rapid and reversible detection of proteins on nitrocellulose and PVDF membranes for the verification of the transfer efficiency of Western Blotting before proceeding with incubation with primary antibody.

500 mL - ref. GB21.0500

### COOMASSIE BRILLIANT BLUE

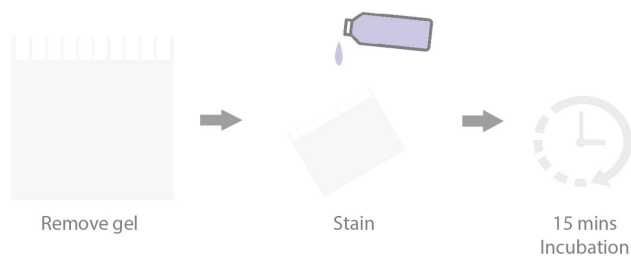
Coomassie Brilliant Blue G-250 (CBB) is widely used for visualizing proteins after electrophoresis. For in-gel staining of proteins. Suitable for acrylamide and agarose gels.

1 L - ref. GS22.1000

### XPRT SAFE PROTEIN STAIN

Colloid solution of Coomassie Brilliant Blue G-250 that is non-toxic and non-hazardous. The procedure does not require a fixing step and washing can be carried out using water, making in-gel staining both safer, less expensive and much faster.

1 L - ref. GS23.1000



# 07 CELL BIOLOGY

Transfection  
Cell Detachment  
Supplements  
Antibiotics  
Cell Biology Solutions  
Assays



## TRANSFECTION

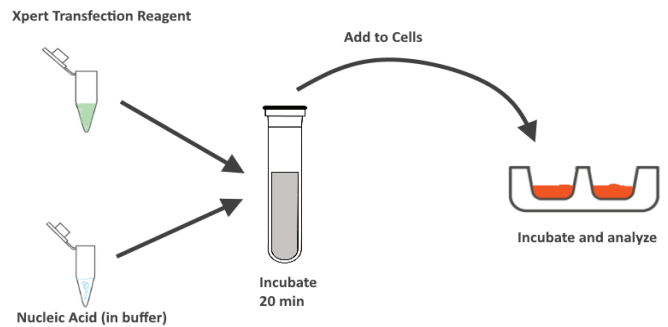
High performance, multi-purpose reagent for transfection with pDNA, siRNA, mRNA and miRNA.

### XPert TRANSFECTION REAGENT

Multi-purpose reagent with very low cytotoxicity, suitable for the transfection of most cell lines using either pDNA, siRNA, mRNA, and miRNA, as well as co-transfection.

- High efficiency with low toxicity
- Serum compatible and free of animal components
- Excellent performance with primary cell lines and stem cells
- Dilution buffer included

1 mL - ref. GTC50.0001



## CELL DETACHMENT

Solutions for detachment of cells in cell culture applications. From the most common Trypsin to the new and advantageous Accutase.

### ACCUTASE

Ready-to-use non-mammalian, non-bacterial replacement for all applications of trypsin. Accutase® is a natural enzyme mixture with proteolytic and collagenolytic enzyme activity. This means it mimics the action of trypsin and collagenases. Less toxic and more gentle than trypsin, not just as effective. Works extremely well on embryonic and neuronal stem cells.

100 mL - ref. GTC01.0100

### TRYPSIN-EDTA IN DPBS

Filter sterilized solution of Trypsin from porcine pancreas in PBS (pH 7.0-7.6) with EDTA, w/o Ca<sup>2+</sup>, w/o Mg<sup>2+</sup> and without Phenol red. Available in two different concentrations.

100 mL (0.05%) - ref. GTC02.0100

100 mL (0.5%) - ref. GTC06.0100

## SUPPLEMENTS

Solutions commonly used as supplements in cell culture applications.

### L-GLUTAMINE

Filter sterilized 200mM L-Glutamine. Essential amino acid to be used as a serum-free supplement in cell culture media.

100 mL - ref. GTC03.0100

### STABLE L-GLUTAMINE

Filter sterilized 200mM stabilized L-Glutamine (L-alanyl-L-Glutamine). Essential amino acid to be used as a serum-free supplement in cell culture media.

100 mL - ref. GTC04.0100

### HYBRIDOMA SUPPLEMENT (SERUM-FREE)

Chemically defined serum-free growth promoting supplement, suitable for fusion, selection and cloning of hybridoma cells.

100 mL - ref. GTC07.0100

## ANTIBIOTICS

The most widely used antibiotics for cell culture applications.

### PENICILLIN-STREPTOMYCIN

Filter sterilized, ready-to-use concentrated broad band antibiotic mixture of 10,000U/ml Penicillin and 10mg/ml *Streptomycin* in 0.9% NaCl, effective against Gram(+) and Gram(-) bacteria.

100 mL - ref. GTC05.0100

### ANTIBIOTIC-ANTIMYCOTIC SOLUTION

Mixture of Penicillin, *Streptomycin* and *Amphotericin B* in saline solution for the prevention of bacterial and fungal contamination in cell cultures.

100 mL - ref. GTC10.0100

### MYCOPLASMA REMOVAL REAGENT

Highly efficient antibiotic that at low concentration exhibits toxicity towards a broad range of mycoplasma subspecies, for the treatment of mycoplasma contaminated cell cultures.

100 mL - ref. GTC11.0100

### G-418 SULFATE SOLUTION

Geneticin is an aminoglycoside antibiotic from *Micromonospora rhodorangea*, related to Gentamicin, which acts by inhibiting protein synthesis. It exhibits toxicity towards both prokaryotic and eukaryotic cells, allowing for the selection and maintenance of cells harbouring the Tn5-derived neomycin resistance gene (neo) encoding amino-glycoside-3'-phosphotransferase.

10 mL - ref. GTC12.0010

## CELL BIOLOGY SOLUTIONS

Solutions used in common cell culture applications.

### DPBS (1x) without Ca, Mg, and Phenol Red

Filter sterilized solution of Dulbecco's PBS, without Ca<sup>2+</sup>, without Mg<sup>2+</sup>, and without Phenol Red.

500 mL - ref. GTC13.0500

### HEPES BUFFER SOLUTION (1M)

Widely used buffering agent in cell culture media. In comparison with bicarbonate buffer systems, HEPES is better in maintaining physiological pH despite changes in CO<sub>2</sub> concentrations resulting from cellular activity.

100 mL - ref. GTC14.0100

### WATER (Cell-Culture Grade)

Quality tested, ultrapure water, suitable for use in cell culture applications. It has been prepared by a purification process that includes distillation, ion exchange via reverse osmosis, deionization and ultraviolet disinfection and does not use chemical compounds such as DEPC. Sterile and endotoxin-free.

1000 mL - ref. GTC99.1000

### XPRT CELL FREEZING SOLUTION

Xpert Cell Freezing Solution is a ready-to-use serum-free medium, containing 10% DMSO, for long-term storage of cells at -800C [or in liquid nitrogen at -1960C, if desired]. It is ideal for the preservation of precious cultures, including normal cells as well as tumor cells and stem cells.

#### High recovery rate

Serum-Free Xpert Cell Freezing Solution shows high survival rates of many cell lines, including stem cells

#### No Liquid Nitrogen required

Can be stored at -800C without cell death or differentiation

#### No Gradual Freezing Steps Needed

Can be stored at -800C directly

#### Ready-to-Use

No medium preparation or dilution required

20 mL - ref. GTC23.0020

## ASSAYS

Sensitive assays for cell biology applications

### XPRT BLUE CELL VIABILITY ASSAY

The Xpert Blue Cell Viability Assay offers a simple, fast and sensitive method for the detection of cellular metabolic activity. This assay is based on the irreversible reduction of the blue, non-fluorescent and non-toxic dye Resazurin into pink and highly-fluorescent Resorufin (red) by diaphorase-type enzymes or other reductases present in mitochondria and cytosol of metabolically active cells.

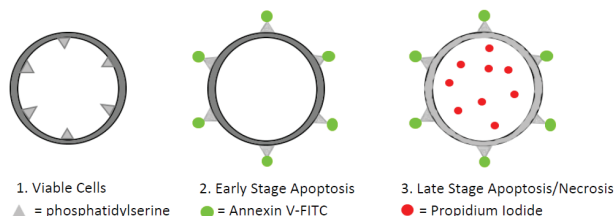
25 mL - ref. GTC20.0025

### XPRT ANNEXIN V-FITC APOPTOSIS DETECTION ASSAY

The Xpert Annexin V-FITC Apoptosis Detection Assay offers a simple, fast and reliable method for the fluorescent detection of apoptotic cells and quantitative determination by flow cytometry.

This assay is based on binding of FITC-labeled Annexin V to phosphatidylserine sites (PS) present on the membrane surface of apoptotic cells, combined with the binding of propidium iodide (PI) to cellular DNA in necrotic cells in which cell membrane integrity has been completely compromised. This allows to distinguish between viable cells, early apoptotic cells and necrotic cells.

100 assays - ref. GTC21.0100





**08** SOLUTIONS





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## SOLUTIONS

Wide range of solutions, commonly used for molecular biology applications.

### **PBS (20X) STERILE**

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1 L - ref. GS10.0120

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### **PBS (10X) STERILE**

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1 L - ref. GS11.0110

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### **PBST (10X)**

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1 L - ref. GS12.0110

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### **TBS (10X) STERILE**

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1 L - ref. GS13.0110

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### **HEPES (1M) PH7.3 STERILE**

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1 L - ref. GS14.0110

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### **SSC (20X) STERILE**

---

1 L - ref. GS16.0120

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### **SSPE (20X) PH7.4**

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1 L - ref. GS17.0120

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### **TPE (10X)**

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1 L - ref. GS18.0110

---

### **TRIS-TAURINE (20X)**

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1 L - ref. GS19.0120

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Whenever you need a solution, GRiSP is the solution

# GRiSP CUSTOM SOLUTIONS

GRiSP PRODUCES ON-DEMAND, HIGH-QUALITY SOLUTIONS,  
ADJUSTED TO YOUR NEEDS. JUST CONTACT US FOR A QUOTATION,  
INDICATING AS MUCH DETAILS AS POSSIBLE:

VOLUME, CONCENTRATION, COMPOSITION, PH, PACKAGE TYPE  
(TRANSPARENT OR AMBER, BAG-IN-BOX, ETC), MOLECULAR BIOLOGY GRADE  
OR OTHER, STERILE OR NOT, AMOUNT NEEDED, ETC.

For information and quotations, please contact us via [info@grisp.pt](mailto:info@grisp.pt)



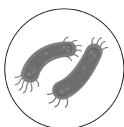
# 09 qPCR DETECTION KITS

Pathogens  
Meat  
Wine  
GMOs  
Allergens



- Food Safety and Fraud are growing global concerns, as pathogens and allergens are ever-increasing causes of foodborne illnesses worldwide.
- Identification of species present in food, feed or ingredients is therefore of the utmost importance so that origin can be traced and cleaning processes can be monitored. Moreover, there is an increasing interest in Halal, Kosher, Vegetarian and Vegan food products, for which identification of meat and fish species in foodstuffs is essential.
- Real-time PCR (qPCR) is the quickest and most accurate method to screen water, beverages, food and foodstuffs for pathogens or allergens. qPCR also allows for the identification of meat and fish as well as the detection of genetically modified organisms (GMOs).
- GRiSP's qPCR Detection Kits provide a fast and reliable method, with low limit of detection and 100% specificity, based on real-time PCR reactions that amplify unique species-specific target sequences. The detection kits are compatible with all real-time PCR instruments equipped with FAM (for target) and ROX (for internal control) channels.

## PATHOGENS



Pathogens are a major cause of foodborne and waterborne diseases, with an estimated 400,000 deaths every year. Traditional microbiological detection and confirmation methods typically require 4-5 days in order to obtain results. With GRiSP's qPCR Detection kits this time can be reduced to less than 2 days, allowing taking appropriate action much sooner.

## MEAT



Species authenticity can be extremely relevant to consumers for a variety of reasons including economic, medical and religious reasons. Hence, fraudulent substitution by less expensive ingredients, or inclusion of meat in vegetarian products are issues of major concern. GRiSP's qPCR Detection kits allow for the detection of as little as 0.1% of species-specific DNA, even highly fragmented DNA in food samples.

## WINE



Wines, soft drinks, and dressings can be potentially spoiled by the presence of microorganisms such as yeasts. Traditional microbiological detection methods typically require long incubation times. GRiSP's qPCR Detection kits allow for an immense time reduction, enabling winemakers and other food producers taking appropriate action much sooner.

## GMOs



In most countries, usage of GMOs is highly regulated. For the enforcement of national legislation, efficient detection of genetically modified organisms in food and feed products is essential. GRiSP's qPCR Detection kits allow for the detection of as little as 0.01-0.1% of GMO DNA in food samples.

## ALLERGENS



The presence of allergens in food is an issue of major concern, as reactions triggered by the ingestion of even minimal doses of food allergens varies but could lead to severe potentially lethal anaphylactic shocks. For the enforcement of national legislation and combat of fraud, efficient identification is essential, something that can be accomplished with GRiSP's qPCR Detection kits, with very low detection limits.

## PATHOGENS

qPCR Detection kits for the detection and identification of bacterial pathogens in processed and unprocessed food products. After initial pre-enrichment according to ISO norms, contamination can be detected fast and easy, with low L.O.D. and 100% specificity. Kits validated according to ISO 22118:2011.

### XPRT qDETECT SALMONELLA SPP.

For the detection of *Salmonella* spp. in food samples. As little as 1-10 cells per 25g of food sample can be detected with a specificity of 100%.

100 rxn - ref. GDK01.0100

### XPRT qDETECT E.COLI (EPEC, VTEC AND EHEC)

For the detection of *E.coli vtx1*, *vtx2* and *eae* genes for the identification of EPEC, VTEC and EHEC pathotypes. As little as 1-10 cells per 25g of food sample can be detected with a specificity of 100%

50 rxn each - ref. GDK02.0150

### XPRT qDETECT L. MONOCYTOGENES

For the detection of *Listeria monocytogenes* in food samples. As little as 1-10 cells per 25g of food sample can be detected with a specificity of 100%.

100 rxn - ref. GDK03.0100

### XPRT qDETECT VIBRIO SPP.

For the detection of *V. cholerae* and *V. parahaemolyticus* in food samples, as little as 1-10 cells per 25g of food sample can be detected with a specificity of 100%.

50 rxn each - ref. GDK04.0100

### XPRT qDETECT CAMPYLOBACTER JEJUNI

For the detection of *Campylobacter jejuni* in food samples. As little as 1-10 cells per 25g of food sample can be detected with a specificity of 100%.

100 rxn - ref. GDK05.0100

### XPRT qDETECT E. COLI SEROTYPES (O157,O26,O111,O103,O145)

For the detection of genes from *E.coli* serotypes O157, O26, O111, O103 and O145, pathogens associated with haemolytic uremic syndrome (HUS). As little as 1-10 cells per 25g of food sample can be detected with a specificity of 100%

50 rxn each - ref. GDK06.0250

### XPRT qDETECT CRONOBACTER SPP.

For the detection of *Cronobacter* spp. in food samples, as little as 1-10 cells per 25g of food sample can be detected with a specificity of 100%.

100 rxn - ref. GDK08.0100

### XPRT qDETECT LEGIONELLA SPP.

For the detection of *Legionella* spp. from water samples. As little as 103 cells/L (after concentration) can be detected with a specificity of 100%

100 rxn - ref. GDK17.0100

### XPRT qDETECT L. PNEUMOPHILA

For the detection of *L. pneumophila* from water samples. As little as 103 cells/L (after concentration) can be detected with a specificity of 100%

100 rxn - ref. GDK18.0100

### XPRT qDETECT DUPLEX LEGIONELLA SPP. AND L. PNEUMOPHILA

For the simultaneous detection of *Legionella* spp. and *L. pneumophila* from water samples. As little as 103 cells/L (after concentration) can be detected with a specificity of 100%

100 rxn - ref. GDK19.0100



09

qPCR DETECTION KITS

## MEAT

qPCR detection kits for the authentication of species present in unprocessed and processed food products, feed or ingredients, with detection limits of as little as 0.1% of species-specific DNA, even when highly fragmented.

### XPERT qDETECT COW

For the detection of bovine DNA in food samples with a detection limit of 0.1% in 100ng total DNA (mixed species)

100 rxn - ref. GDK09.0100

### XPERT qDETECT SWINE

For the detection of porcine DNA in food samples with a detection limit of 0.1% in 100ng total DNA (mixed species)

100 rxn - ref. GDK10.0100

### XPERT qDETECT HORSE

For the detection of equine DNA in food samples with a detection limit of 0.1% in 100ng total DNA (mixed species)

100 rxn - ref. GDK11.0100

### XPERT qDETECT DUCK

For the detection of duck DNA in food samples with a detection limit of 0.1% in 100ng total DNA (mixed species)

100 rxn - ref. GDK12.0100

### XPERT qDETECT CHICKEN

For the detection of chicken DNA in food samples with a detection limit of 0.1% in 100ng total DNA (mixed species)

100 rxn - ref. GDK13.0100

### XPERT qDETECT TURKEY

For the detection of turkey DNA in food samples with a detection limit of 0.1% in 100ng total DNA (mixed species)

100 rxn - ref. GDK14.0100

### XPERT qDETECT GOAT

For the detection of caprine DNA in food samples with a detection limit of 0.1% in 100ng total DNA (mixed species)

100 rxn - ref. GDK15.0100

### XPERT qDETECT SHEEP

For the detection of ovine DNA in food samples with a detection limit of 0.1% in 100ng total DNA (mixed species)

100 rxn - ref. GDK16.0100

## WINE

qPCR Detection kits for the early detection of yeast causing spoilage of wine and other beverages.

### XPERT qDETECT BRETTANOMYCES/DEKKERA

For the detection of *Brettanomyces* (the anamorphic stage of *Dekkera bruxellensis*), responsible for undesired sensory effects (such as rancidity) with a detection limit as little as 10<sup>2</sup>-10<sup>3</sup> cells per 50 ml of wine and a specificity of 100%

100 rxn - ref. GDK23.0100

### XPERT qDETECT ZYGOSACCHAROMYCES BAILII

For the detection of *Zygosaccharomyces bailii*, responsible for spoilage of wine, soft drinks, syrups and dressings, with a detection limit as little as 10<sup>2</sup>-10<sup>3</sup> cells per 50 ml of wine and a specificity of 100%

100 rxn - ref. GDK24.0100

## GMOS

Taking into account the large diversity of GMOs, GRiSP's qPCR Detection kits are intended for initial generic screening for the detection of the promotor 35S from cauliflower mosaic virus, the terminator NOS from *Agrobacterium tumefaciens* and/or the promotor from FigWorth Mosaic Virus (P-FMV), as these regulatory sequences are the most frequent elements present found in transgenic material.

### XPERT qDETECT P-35S AND T-NOS

For the detection of DNA sequences from the promotor 35S from CaMV and the terminator NOS from *Agrobacterium tumefaciens* in food or feed samples, with a detection limit of 0.1% in 100ng of GMO DNA

**100 rxn each** - ref. GDK20.0200

### XPERT qDETECT P-FMV

For the detection of a specific DNA sequence from the promotor from FMV, present in food or feed samples, with a detection limit of 0.1% in 100ng of GMO DNA

**100 rxn** - ref. GDK22.0100

### XPERT qDETECT P-35S, T-NOS AND P-FMV

For the detection of DNA sequences from the promotor 35S from CaMV, the terminator NOS from *Agrobacterium tumefaciens*, and a promotor from FMV, in food or feed samples, with a detection limit of 0.1% in 100ng of GMO DNA

**50 rxn each** - ref. GDK21.0150

## ALLERGENS

According to the European Commission Directive 2002/86/EC and other national legislations, the most important food allergens must be disclosed on the labels of food products, however, for all kind of reasons, this may not be the case. GRiSP's qPCR Detection kits allow for the detection of very low amounts of DNA from common food allergens, even when DNA is highly fragmented due to food processing.

### XPERT qDETECT CELERY

For the detection of celery DNA in food samples with a detection limit of 10pg in 100ng total DNA (mixed species)

**100 rxn** - ref. GDK25.0100

### XPERT qDETECT SOY BEAN

For the detection of soy DNA in food samples with a detection limit of 50pg in 100ng total DNA (mixed species)

**100 rxn** - ref. GDK28.0100

### XPERT qDETECT SESAME

For the detection of sesame DNA in food samples with a detection limit of 1pg in 100ng total DNA (mixed species)

**100 rxn** - ref. GDK26.0100

### XPERT qDETECT HAZELNUTS

For the detection of hazelnut DNA in food samples with a detection limit of 0.1pg in 100ng total DNA (mixed species)

**100 rxn** - ref. GDK29.0100

### XPERT qDETECT PEANUTS

For the detection of peanut DNA in food samples with a detection limit of 10pg in 100ng total DNA (mixed species)

**100 rxn** - ref. GDK27.0100

### XPERT qDETECT CASHEW

For the detection of cashew DNA in food samples with a detection limit of 1pg in 100ng total DNA (mixed species)

**100 rxn** - ref. GDK30.0100

**XPERT qDETECT LUPIN**

For the detection of lupin DNA in food samples with a detection limit of 1pg in 100ng total DNA (mixed species)

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**100 rxn** - ref. GDK31.0100

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**XPERT qDETECT MUSTARD**

For the detection of mustard DNA in food samples with a detection limit of 10 pg in 100 ng total DNA (mixed species)

---

**100 rxn** - ref. GDK32.0100

---

**XPERT qDETECT ALMOND**

For the detection of almond DNA in food samples with a detection limit of 1 pg in 100 ng total DNA (mixed species)

---

**100 rxn** - ref. GDK33.0100

---

**XPERT qDETECT WALNUT**

For the detection of walnut DNA in food samples with a detection limit of 0.01 pg in 100 ng total DNA (mixed species)

---

**100 rxn** - ref. GDK34.0100

---

**XPERT qDETECT PECAN**

For the detection of pecan DNA in food samples with a detection limit of 0.01 pg in 100ng total DNA (mixed species)

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**100 rxn** - ref. GDK35.0100

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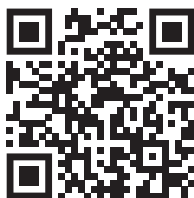




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Directly via email or through our distributors.

**Delivery time:**

**Portugal:** 1-2 working days after order  
(except in case of stock rupture).

**Other Countries:** Contact your local distributor  
or [info@grisp.pt](mailto:info@grisp.pt) for more information.

**Please use one of the following contacts:**

email: [info@grisp.pt](mailto:info@grisp.pt)  
tel: +351 220 301 599

**Postal address:**

GRiSP, Lda  
Rua Alfredo Allen, 455  
4200-135 Porto  
Portugal