

New Technologies

Molecular Biology Products

2007

PCR reagents & more, Nucleic Acid Purification Kits
EvaGreen™ fluorescent DNA dye, GelRed™ & GelGreen™

Never lose half your Prep
in columns again!

Obtain fully intact
genomic DNA!

PCR Reagents: Taq Polymerase with highest activity

MolTaq is a thermostable DNA-dependent DNA polymerase from *Thermus sp.*. The enzyme has 5'-3' polymerase, 5'-3' exo-nuclease (strand displacement) and 3' terminal deoxynucleotidyl transferase (addition of single dATP to the duplex DNA). **MolTaq** incorporates modified nucleotides at high rates and can be used to introduce new restriction sites into an amplification product.

MolTaq^{RED}

This Taq DNA polymerase contains already loading buffer (dye). Loading of the gel is easy, because you do not have to add slot marker and can follow the migration of the running front in the gel.

MolTaq Mastermix

This mastermix is a ready to go, 2-fold concentrated solution containing MolTaq DNA polymerase, buffer and dNTPs. Just add primers and template DNA - ready for PCR.

MolTaq^{RED} Mastermix

This product combines convenience, safety and efficiency of PCR amplifications. The optimal solution for medium and high throughput PCR routine.

Exclusively
available through:

**BIO
TREND**®

BIOTREND Chemikalien GmbH
Im Technologiezentrum Köln
Eupener Str. 157 • D-50933 Cologne
Tel. +49 (0) 221/9 49 83 20
Fax. +49 (0) 221/9 49 83 25
jaeger@biotrend.com

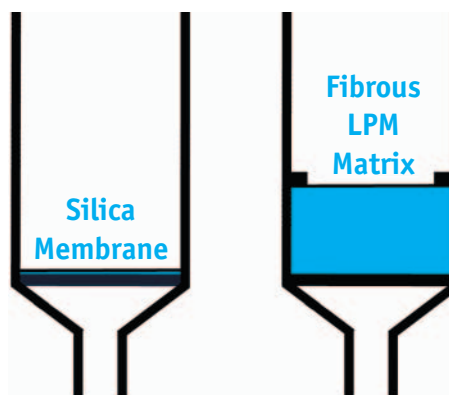
PCR Reagents & More

- DNA Polymerase & Mastermix
- DNA Gel Extraction Kit
- Mini/Midi Plasmid Preparation Kits

Nucleic Acid Preparation for

- Extreme Yields
- Large DNA/RNA* Loads
- Simple Handling
- High Molecular Weight XNA

* RNA without Mercaptoethanol!



Loss Protection Matrix:

- **No Pores!**
- **No Shearing!**
- **No Loss!**

www.biotrend.com

The 15 Minutes Kits:

Plasmid Miniprep

The **UltraPrep Plasmid Mini** kit is designed for the rapid and high yield isolation of high and low copy plasmids from up to 6 ml E. coli culture. Moreover, high molecular size plasmids can be isolated from E. coli as well as other Gram-negative bacteria. The plasmid DNA is highly pure and can be used for restriction, cloning, hybridisation, sequencing and other applications.

- Up to **20 µg high copy plasmid DNA**.
- Up to **7 µg low copy** and high molecular size plasmids (>50 kb), including cosmids and fosmids.



Gel Extraction

UltraPrep Plasmid-Ex is a kit for easy and rapid extraction and purification of DNA fragments and plasmids from TBE, TAE, low melting and high melting agarose gels.

The **UltraPrep Plasmid-Ex** buffers are optimized for high yield recovery of DNA fragments and supercoiled plasmid DNA. The DNA is recovered in a small volume without the need of ethanol precipitation. The DNA preparations are free of salts, ethidium bromide, agarose and organics and can be used directly in subsequent applications such as restriction, ligation, transformation and sequencing.

- For **DNA fragments** from **100 bp up to 23 kb**
- Linearized and supercoiled **plasmid DNA** from **3kb up to 12 kb**

Nucleic Acid Purification Kits (Mini Spin)

Total RNA Isolation

LPM-Spin R Bug

Total RNA Isolation from gram negative and gram positive bacteria in just 15 minutes.

LPM-Spin R Fungi

Total RNA Isolation from yeast and fungi in just 60 minutes.

LPM-Spin R Plant

Total RNA isolation from Monocots & dicots in just 50 minutes. Removal of inhibitors (CTAB/PVP).

- Optimized lysis and purification protocol guaranty highest yields.
- Inhibitor removal
- Highly chaotropic lysis conditions yield perfectly stable RNA preparations.

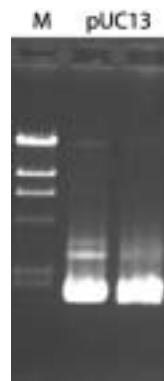
Plasmid Midi Preparation

LPM-Spin D Plasmid Midi 20H Kit

50 (250) reactions for 125,- € (562,- €)
Reduce Duration: 30-Minutes-Protocol (no vacuum)
High Yields: Up to 80 µg high-copy plasmid DNA

LPM-Spin D Plasmid Midi 100L Kit

25 (100) DNA reactions for 112,- € (399,- €)
Reduce Duration: 45-Minutes-Protocol (no vacuum)
High Yields: Up to 120 µg low-copy Plasmid DNA



Demonstration of the extremely high proportion of supercoil (ccc) to open circular plasmid DNA (oc). Preparation from 20 ml culture with the LPM-Spin D Plasmid Midi20H Kit. M: Marker Lambda HindIII

Genomic DNA Preparation (Mini Spin Format)

LPM-Spin D Bug

Total nucleic acid and DNA isolation of gram positive and negative bacteria in only 90 minutes. Yields up to 80 µg in only 30 minutes.

LPM-Spin D Fungi

Total nucleic acid and DNA isolation from yeast & fungi with highly efficient lysis procedures. Isolates in 60-90 minutes.

LPM-Spin D Plant

DNA isolation in just 50 min. Protocol for removal of PCR inhibitors. For Monocots & Dicots.

LPM-Spin D Blood & Cell Culture

Rapid DNA isolation from whole blood and cultured cells. Highly pure DNA for any downstream application.

Material	Yield (260 nm)		Quality (E260/E280)	
	LPM Matrix/ CCT	Silica Membrane salting out	LPM Matrix/ CCT	Silica Membrane salting out
Bacteria				
1 ml E. coli (g-)	18.0 µg	4.1 µg	1.77	1.72
5 ml E. coli (g-)	79.5 µg	-	2.00	-
Yeast (1 ml)				
S. Carlsbergensis	9.1 µg	3.3 µg	2.11	2.09
S. boulardii	22.7 µg	2.7 µg	2.08	2.34
Plant Leaves (100 mg)				
Tomato	8.9 µg	2.9 µg	1.90	1.73
Wheat	33.6 µg	13.6 µg	1.89	1.89

Figure: Typical yields using LPM-Spin D Kits (RNase Treatment; elution volumes 100 µl) in comparison to silica membrane/salting-out method.

Nucleic acid purification kits, enzymes and reagents for molecular biology...

PCR / Thermostable DNA polymerases	Product Name/Product Description	Cat.No.	Size	Price €
	Moltag Thermostable DNA Polymerase	P-010-1000	1.000 Units	172,50
		P-010-5000	5.000 Units	776,50
	Moltag^{RED} DNA Polymerase (red dye for visualization)	P-040-1000	1.000 Units	195,50
		P-040-5000	5.000 Units	880,00
	Moltag Mastermix (2x Mix incl. Moltag, buffer and dNTPs)	P-070-250	250 Reacts	115,00
		P-070-1000	1000 Reacts	414,00
Moltag^{RED} Mastermix (2x Mix incl. Moltag, buffer, dNTPs and red dye)	P-071-250	250 Reacts	126,50	
	P-071-1000	1000 Reacts	455,00	
Nucleotides dNTP Mix (20 mM of each dNTP)	P-900-040	40 µmol (0.5 ml)	80,50	
	P-900-200	5 x 40 µmol (2.5 ml)	373,00	
	P-900-1000	25 x 40 µmol (12.5 ml)	1586,00	

DNA purification kits	Product Name/Product Description	Cat.No.	Size	Price €
	Genomic DNA PrestoSpin D Bug Gram-positive/Gram-negative bacteria	D-040-050	50 React.	114,00
		D-040-250	250 React.	482,00
	PrestoSpin D Fungi Yeasts and fungi	D-050-050	50 React.	114,00
		D-050-050	250 React.	482,00
	PrestoSpin D Plant Plants and soil	D-060-050	50 React.	114,00
		D-060-050	250 React.	515,00
	PrestoSpin D Blood & Cell Blood and cell culture	D-090-050	50 React.	98,00
		D-090-050	250 React.	440,50
	Plasmid DNA - Mini Preparation UltraPrep Plasmid Mini up to 6 ml culture - high and low copy plasmids; high yield, ultra pure	D-200-050	50 React.	63,00
		D-200-050	250 React.	276,00
	Plasmid DNA - Mini Preparation PrestoSpin D Plasmid Midi100L Low copy plasmids - cosmids, up to 100 ml culture volume	D-100-025	25 React.	129,00
		D-100-100	100 React.	459,00
	PrestoSpin D Plasmid Midi100L High copy plasmids - cosmids, up to 20 ml culture volume	D-110-050	50 React.	144,00
		D-110-250	250 React.	646,00
Gel extraction UltraPrep Gel-Ex DNA fragments and plasmids	D-250-050	50 React.	79,50	
	D-250-250	250 React.	328,00	

Total RNA purification kits*	Product Name/Product Description	Cat.No.	Size	Price €
	PrestoSpin R Bug Gram-positive/Gram-negative bacteria	N-040-050	50 React.	205,00
		N-040-250	250 React.	899,00
	PrestoSpin R Plant Monocots and dicots	N-060-050	50 React.	247,00
		N-060-050	250 React.	1104,00
	PrestoSpin D Fungi Yeasts	N-050-050	50 React.	247,00
		N-050-050	250 React.	1104,00

*Kits contain RNase-free DNase I for on-column DNA degradation.

Ordering Information

EvaGreen™
*is the superior Dye
 alternative for qPCR*

*We know
 that you have been looking
 hard for an alternative.
 Now look no further.
 EvaGreen™ is not just another
 Competitor Dye, it is simply
 the best green fluorescent
 DNA dye for qPCR.*

Biotium in collaboration with AlleLogic Biosciences Corp. has developed EvaGreen™ as a superior fluorescent DNA stain for quantitative real-time PCR (qPCR). EvaGreen™ is truly a remarkable dye in many aspects. Upon binding to DNA, the fluorescence of EvaGreen™ is several-fold higher than that of Competitor Dye while EvaGreen™ shows very little inhibition to the PCR process.

Unlike Competitor Dye, which has been reported to be unstable, EvaGreen™ is highly robust, both thermally and hydrolytically under alkaline or acidic condition. In addition, the absorption and emission spectra of EvaGreen™ are similar to those of Competitor Dye or FAM, which means that the same optical setting for Competitor Dye can also be used for EvaGreen™.

We now offer two EvaGreen™ products:

**EvaGreen™
 at 20 x concentration (#31000)**

**EvaGreen™ qPCR Basic Mix
 at 2 x concentration (#31001)**

The Basic Mix contains everything you need to run a qPCR except for the Taq enzyme.

We will soon offer **EvaGreen™ qPCR Master Mix**, which contains all necessary components for qPCR.

**EvaGreen™ vs. Competitor Dye:
 - the difference is black and white**

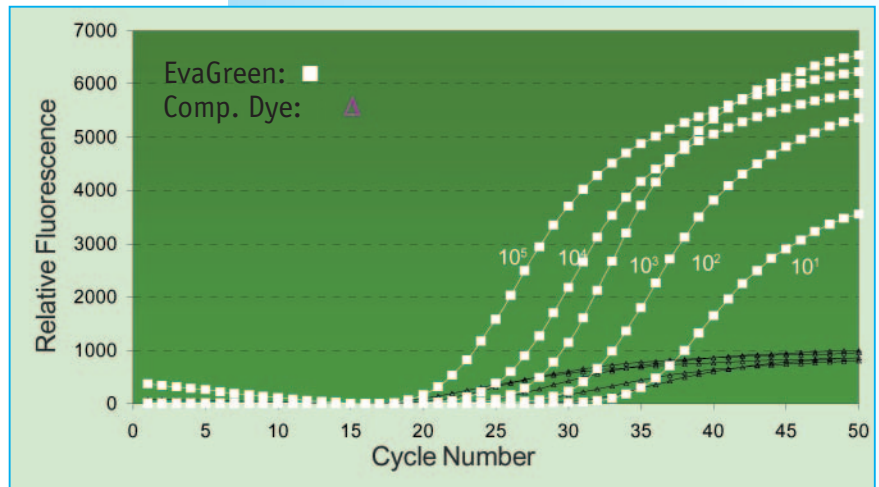


Figure 1. PCR kinetic plots using EvaGreen™ (white square) and Competitor Dye (black triangle), respectively, in titration of human genomic DNA.

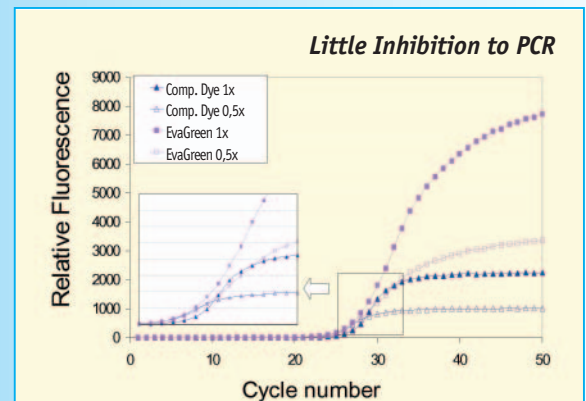


Figure 2. PCR amplification plots using EvaGreen™ and Competitor Dye at two different concentrations. Competitor Dye exhibits significant PCR inhibition at 1x concentration (OD ~ 0.05) while EvaGreen™ does not (See inset).



*EvaGreen™ and its uses
 are covered by pending US
 and international patents.*

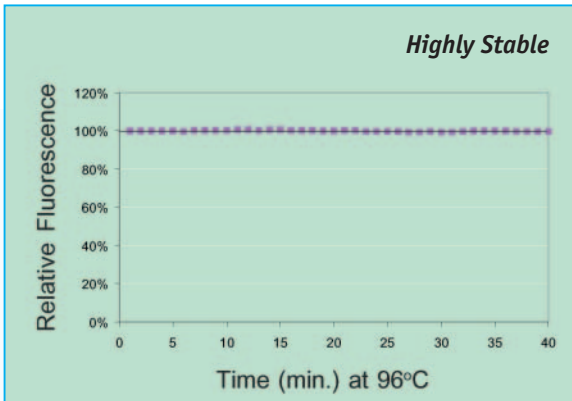


Figure 4. Stability of EvaGreen™ in the presence of DNA at 96°C. Fluorescence was recorded at 60°C and the Time axis represents total accumulated time at 96°C.

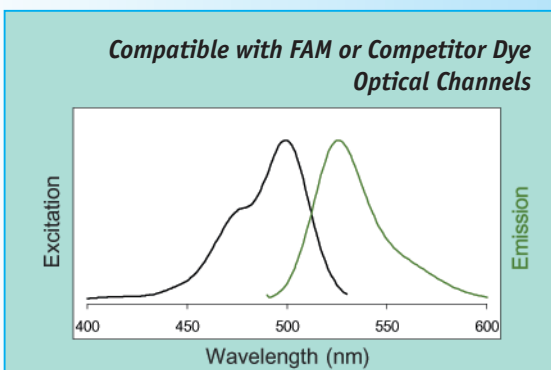


Figure 3. Excitation and emission spectra of EvaGreen™ in the presence of dsDNA in PBS buffer.

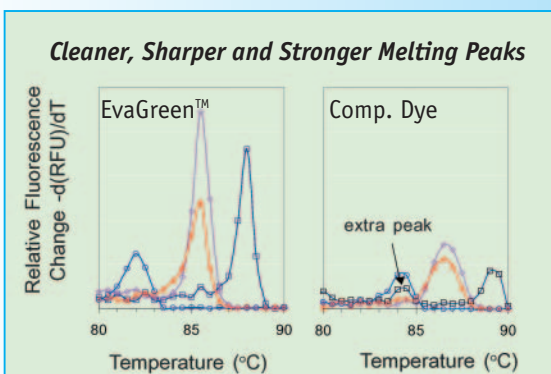


Figure 5. DNA melting curve analysis using EvaGreen™ and Competitor Dye, respectively, with 4 different amplicons: 1) TBP (--); 2) SDHA (--); 3) RPL4 (--); and 4) HMBS (--). Competitor Dye exhibits significant PCR inhibition, resulting in occasional formation of an extra melting peak.

- **Very Little PCR inhibition**

Unlike Competitor Dye, EvaGreen™ shows very little PCR inhibition.

- **Highly bright fluorescence**

The fluorescence brightness of EvaGreen™ in qPCR is simply unmatched by that of Competitor Dye.

- **Superior stability**

Unlike Competitor Dye, which has been reported to be unstable¹, EvaGreen™ is extremely stable.

- **Excellent compatibility**

Simply replace Competitor Dye with EvaGreen™. No need to change anything else in your existing formulation and instrument setting. The only difference you will see is a better performance.

1. Karsai, et al. *BioTechniques* 32(4), 790(2002);

EvaGreen™ Products

Product	Cat.No.	Size	Price €
EvaGreen™, 20x	31000	5 x 1ml	207,00
EvaGreen™, qPCR Basic Mix, 2x	31001	3 x 1,7ml	207,00
EvaGreen™, qPCR Master Mix, 20000x	31002	1ml	546,50



EvaGreen™ products are available for end-users and authorized Biotium distributors only. Resales of the products and derivative products require a license from Biotium, Inc. or its co-developer AlleLogic Biosciences Corp. (www.allelogic.com).

GelRed™ & GelGreen™, the best nucleic acid gel stains by combining sensitivity, safety and stability...

**GelRed is simply the best
for either precast or post gel staining**

GelRed has just gotten even better now:

- Available at 10,000x in water for even better safety
- Room temperature storage for even better convenience
- New post staining protocol for even better sensitivity and convenience without using a buffer

**GelGreen has the sensitivity of SYBR Green I
plus unmatched stability**

GelRed has just gotten even better now:

- Available at 10,000x in water for even better safety
- Room temperature storage for even better convenience
- New post staining protocol for even better sensitivity and convenience without using a buffer

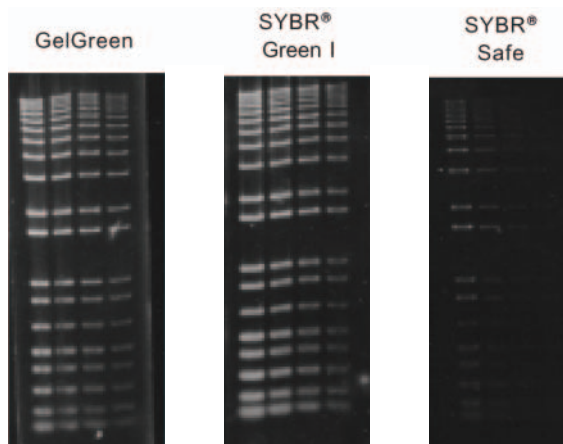


Figure 2.
Comparison of GelGreen, SYBR® Green I and SYBR® Safe in post gel staining using 1% agarose gel in TBE buffer. Twofold serial dilution of 1 kb Plus DNA Ladder from Invitrogen were loaded onto each gel in 4 lanes in the amounts of 200 ng, 100 ng, 50 ng and 25 ng, respectively, from left to right. Gels were imaged using 254-nm transillumination and photographed with a SYBR filter and Polaroid 667 black-and-white print films.

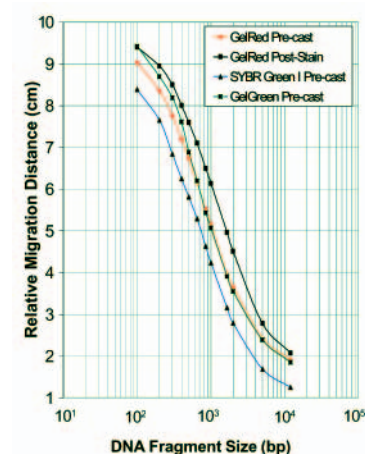


Figure 3.
Plot of relative migration distance of dsDNA in various 1% agarose precast gels vs DNA size. Precast gels containing each of the 3 dyes, GelRed, GelGreen and SYBR Green I, each at 1x concentration were compared. The curve representing DNA migration distance in the gel post-stained with GelRed vs DNA size was used as a reference. The data shows that GelRed and GelGreen have less effect on DNA migration than SYBR® Green I does.

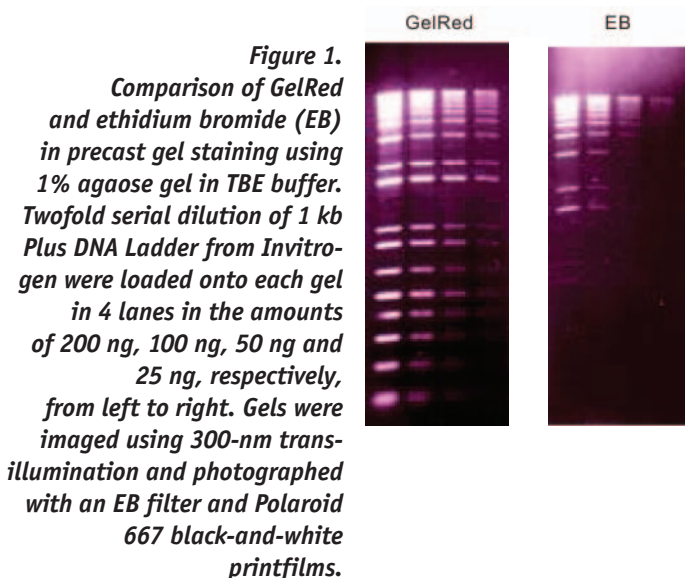


Figure 1.
Comparison of GelRed and ethidium bromide (EB) in precast gel staining using 1% agarose gel in TBE buffer. Twofold serial dilution of 1 kb Plus DNA Ladder from Invitrogen were loaded onto each gel in 4 lanes in the amounts of 200 ng, 100 ng, 50 ng and 25 ng, respectively, from left to right. Gels were imaged using 300-nm transillumination and photographed with an EB filter and Polaroid 667 black-and-white printfilms.

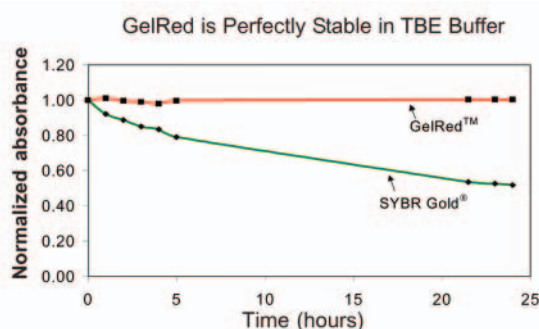


Figure 5.
Normalized absorbances of GelRed™ and SYBR® Gold 1X TBE gel-staining solutions at 500 and 488 nm respectively over time at room temperature. The starting absorbance values for GelRed™ and SYBR® Gold were 0.029 and 0.051, respectively.



EvaGreen™ products are available for end-users and authorized Biotium distributors only. Resales of the products and derivative products require a license from Biotium, Inc. or its co-developer AlleLogic Biosciences Corp. (www.allelogic.com).

* GelGreen™, GelRed™ and EvaGreen™ are covered by pending US and international patents. ** SYBR is a trademark of Molecular Probes, Inc.

GelRed™ and GelGreen™ are two superior fluorescent nucleic acid gel stains by having a combination of high sensitivity, low toxicity and exceptional stability.

Most of the current commercial gel stains are lacking in one or more aspects. For example, although ethidium bromide (EB), the most widely used nucleic acid gel stain, offers acceptable sensitivity in most cases, it is a highly mutagenic chemical and requires a destaining step to reduce background fluorescence. SYBR® Green I and SYBR® Gold have been promoted as the most sensitive gel stains by the manufacturer. However, SYBR® Green I and particularly SYBR® Gold degrade fairly rapidly under the slightly alkaline condition of commonly used electrophoresis buffer as well as in the matrix of precast gels, resulting in unreliable gel staining. SYBR® Safe is marketed as a relatively safe gel stain. However, the dye's performance is far less than that of SYBR® Green I.

GelRed™ and GelGreen™ are highly sensitive either as precast gel stains or post gel stains. Designed primarily for use with a 312 nm UV transilluminator, GelRed is at least as sensitive as or brighter than SYBR® Gold in post gel staining by using our new protocol which uses a simple dilute sodium chloride solution to replace the traditional TBE buffer. Unlike SYBR® Gold, GelRed can also be used as a highly sensitive precast gel stain. Our new GelGreen has been developed to meet the needs of researchers who use a 488 nm laser-based gel scanner or a Dark Reader that uses a visible blue light for excitation. GelGreen is as sensitive as SYBR® Green I in either precast or post gel staining without any stability problem of the latter. In fact, both GelGreen and, in particular, GelRed are so stable that the 10,000x stock solutions of the dyes can be routinely stored at room temperature. The dyes in TBE or a similar electrophoresis buffer can also be heated in a microwave oven, making the dyes compatible with common procedures used in making precast gels. Furthermore, precast gels made with the dyes can be produced in bulk and stored for later use.

Equally important is the improved safety of **GelRed™ and GelGreen™** over EB and SYBR® Green I. Standard Ames tests performed by Litron Laboratories, Inc., an independent testing service, showed that GelGreen is not mutagenic while GelRed showed weak mutagenicity only with S9 metabolic activation and at a dye concentration of 18.5 µg/mL, which is well above the 3x concentration (~4 µg/mL) recommended for post gel staining. Both GelRed and GelGreen have chemical structures that make

the dyes very difficult to enter cells, an intentional design to make dyes less toxic to cells. In comparison, SYBR® Green I has been widely used for staining mitochondrial and nuclear DNA in live cells because of the dye's ability to be rapidly taken up by cells. Since SYBR Green I is known to strongly potentiate mutagenicity caused by UV light (Ohta, et al. *Mutat. Res.* 492, 91(2001), its high membrane permeability could make it a major hazard for gel staining using UV light for gel viewing. For more detailed information, please go to our website to download the complete GelRed/GelGreen Safety Report.

A complete list of **GelRed™ and GelGreen™** products is shown below. GelRed is available as a 10,000X concentrated solution in one of the three solvents, H₂O, DMSO or DMF, or as a ready-to-use 3X solution. GelGreen is available as a 10,000X solution in DMSO.

Note: although GelGreen is a superior substitute for SYBR® Green I for gel staining, it is not recommended for qPCR use, for which we suggest that you use our EvaGreen, an exceptional dye designed for PCR application.

Features

- Superior Sensitivity**
 GelRed and GelGreen are among the most sensitive gel stains available.
- Unsurpassed Stability**
 Can be microwaved and stored at room temperature.
- Improved Safety**
 Shown to be much less mutagenic than ethidium bromide by standard Ames test.
- Ultimate Flexibility**
 Can be used for either precast or post gel staining.
- Simple Staining Procedure**
 No destaining is necessary.
- Minimal Effect on DNA or RNA Mobility**
 Less retardation on nucleic acid migration than SYBR Green I.
- Perfect Compatibility with a Standard UV Transilluminator or a Gel Reader with Visible Light Excitation**
 GelRed perfectly replaces EB for use with a 312 nm UV transilluminator; GelGreen smoothly replaces SYBR® stains for use with a 254 nm UV transilluminator or a gel reader with visible light excitation (See Figure 4 for spectra).

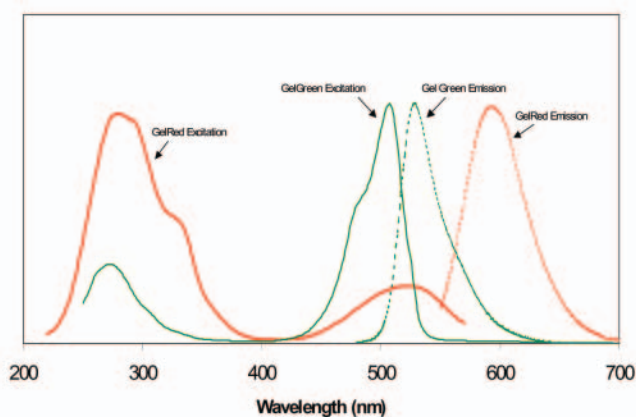


Figure 4.
 Normalized excitation and emission spectra of GelGreen (green) and GelRed (red) in the presence of dsDNA in PBS buffer.

Gel Stain™ Product List

Product	Cat.No.	Size	Price €
GelRed 10,000x in DMF	41000	0,5 mL	132,50
GelRed 10,000x in DMSO	41001	4.0 L	190,00
GelRed 10,000x in H ₂ O	41002	0,5 mL	132,50
GelRed 3x in H ₂ O	41003	0,5 mL	138,00
GelGreen 10,000x in DMSO	41004	0,5 mL	109,50

...all prices net. Taxes and transportation cost extra.

Enquiry

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jaeger@biotrend.com
www.biotrend.com

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University/Company:

Institute/Department:

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Products:

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- Cytokines
- Neurochemicals**
Ligands and Signal Transduction Reagents
- Radiolabeled Chemicals, [³H] [¹⁴C] [³⁵S] [¹²⁵I]**
- Diabetes Research Reagents**
- cAMP, cGMP RIA, EIA
- Assay Designs (PerSeptive Biosystems)
- Chemiluminescence-Immunoassays (CLIA)
Prostaglandins
- Apoptosis Products
- Lipids and Sphingolipids**
Fluorescent Dyes/Indicators
Protein Stabilizer
- Immuno-PCR (IMPERACER Technology)**
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.....
- Please delete me from the mailing list.

Customized Services:

- Antibody Production**
(hosts are : Rabbit, Goat, Pig, Donkey, Chicken etc.)
- Conjugation of Peptides and Antibodies**
(FITC, Alk. Phos., HRP, Biotin, Gold)
- Peptide Syntheses**
(from mg's to g's)
- Customized Tritiation [³H₂]**
(Catalytic Reductions with Curie amounts)
- Customized Iodination [¹²⁵I]**
(Peptides, Growth Factors, Antibodies,
Organic Compounds)
- Radiochemical Syntheses [³H, ¹⁴C]**
- Purification of Radiochemicals [³H, ¹⁴C, ¹²⁵I]**
- Workshops**
Immuno-PCR (IMPERACER Technology)
- Production of your monoclonal Antibodies
- BIOTREND catalogues as Excel-files on CD-ROM**
- Luminex Technology

BIO  **TREND**®