



## Real-Time PCR

- › dye- and probe-based mixes
- › single to multiplex
- › dual labeled probes
- › qPCR lyophilisates
- › qPCR FastMixes

ACCCACGAAAGGGAA ATAAGC AACO TTCAGGGAAGAA CTAUAACTGCCAC ACCCAGAAAGGGAA ATAAGC AACO TTCAGGGAAGAA  
TTCAGGGAAGAA CTAUAACTGCCAC **ACCCACGAAAGGGAA ATAAGC AACO TTCAGGGAAGAA CTAUAACTGCCAC** ACCCAGAAAGGGAA  
GAAAGGGAA ATAAGC AACO TTCAGGGAAGAA CTAUAACTGCCAC ACCCAGAAAGGGAA ATAAGC AACO TTCAGGGAAGAA CTAU



IFA AG  
Certified QMS and EMS according to  
DIN EN ISO 9001 and DIN EN ISO 14001  
Reg.-No.: ICV03597 034 and ICV03597 534

# Real-Time PCR Selector



Simply select assay requirements such as:

- › Multiplex capability
- › Assay type
- › Cycling speed

and receive matching real-time PCR mix!

[www.jenabioscience.com/search-tools](http://www.jenabioscience.com/search-tools)



## Building Blocks of Life



### Molecular Biology & Proteins

For applications in the field of Molecular Biology we offer a large selection of single reagents, complete kits and optimized master mixes. This section includes products for DNA or RNA purification, amplification and modification with focus on PCR-related techniques.



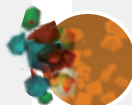
### Click Chemistry, Probes & Epigenetics

Our Probes & Epigenetics as well as Click Chemistry sections offer innovative reagents for the functionalization, conjugation and labeling (fluorophores, haptens) of (bio) molecules complemented by epigenetic modification analysis tools.



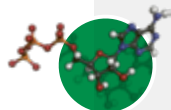
### LEXSY Expression

In the field of recombinant protein production, Jena Bioscience has developed its proprietary LEXSY (Leishmania Expression System) technology. It is based on an S1-classified unicellular organism that combines easy handling with a eukaryotic protein folding and modification machinery. Besides everything you need to establish LEXSY in your lab we also offer custom expression of recombinant proteins.



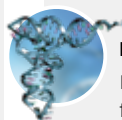
### Crystallography & Cryo-EM

For the crystallization of biological macro-molecules – which is often the bottleneck in determining the 3D-structure of proteins – we offer specialized reagents for protein stabilization, crystal screening, crystal optimization, and phasing that can reduce the time necessary to obtain a high resolution protein structure from several years to a few days.



### Nucleotides & Nucleosides

In our chemistry division, we have hundreds of natural and modified nucleotides in stock. In addition, with our pre-made building blocks and in-house expertise we manufacture even the most exotic nucleotide analog from mg to kg scale.



### RNA Technologies

Ribonucleic acids (RNAs) are essential for transfer of genetic information and cell regulation. Our RNA Technologies division offers a toolbox for synthesis, labeling, modification, analysis and detection of protein-coding messenger RNAs (mRNAs) as well as non-coding RNAs (ncRNAs) complemented by custom specific services.



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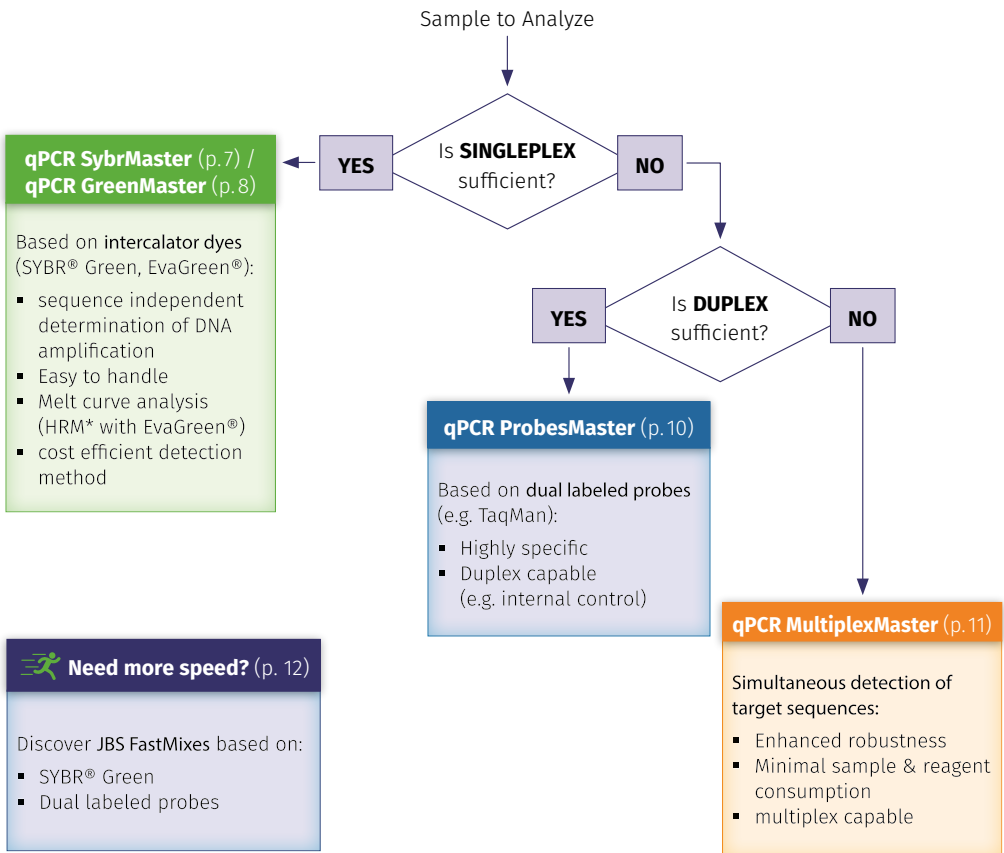
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# Contents

qPCR-mixes: Which one to use?.....	6
qPCR Mixes with SYBR® Green .....	7
qPCR Mixes with EvaGreen®.....	8
SYBR or Eva?.....	9
qPCR Mixes for Dual Labeled Probes .....	10
qPCR Multiplex Mixes.....	11
qPCR FastMixes.....	12
qPCR Lyophilisates .....	13
Dual Labeled Fluorescent Probes .....	14
qPCR Supplements.....	15

# qPCR-mixes: Which one to use?

Quantitative Real-Time PCR (qPCR) is commonly applied to assess nucleic acid quantities. Its design & set up, optimization and potential troubleshooting can be, however, time-consuming, expensive and simply unnecessary! With this decision tree we can help you to set up the most promising assay.



## qPCR Mixes with SYBR® Green

The JBS **qPCR SybrMaster Series** is designed for quantitative real-time analysis of DNA samples. The mixes are recommended for routine PCR applications, high throughput PCR or genotyping.

The fluorescent DNA stain SYBR®Green intercalates into the amplification product during the PCR process and allows the direct quantification of target DNA without the need of sequence-specific labeled probes (i.g. TaqMan® Probes).

The mixes contain all reagents required for qPCR (except template and primers) in a premixed 2 × concentrated ready-to-use solution.

Product	Cat.-No.	Amount
<b>qPCR SybrMaster</b>	PCR-372S	2 × 1,25 ml (2 × conc.)
	PCR-372L	10 × 1,25 ml (2 × conc.)
<b>qPCR SybrMaster lowROX</b>	PCR-373S	2 × 1,25 ml (2 × conc.)
	PCR-373L	10 × 1,25 ml (2 × conc.)
<b>qPCR SybrMasterMaster highROX</b>	PCR-374S	2 × 1,25 ml (2 × conc.)
	PCR-374L	10 × 1,25 ml (2 × conc.)
<b>qPCR SybrMaster UNG</b>	PCR-375S	2 × 1,25 ml (2 × conc.)
	PCR-375L	10 × 1,25 ml (2 × conc.)
<b>qPCR SybrMaster UNG lowROX</b>	PCR-376S	2 × 1,25 ml (2 × conc.)
	PCR-376L	10 × 1,25 ml (2 × conc.)
<b>qPCR SybrMaster UNG highROX</b>	PCR-377S	2 × 1,25 ml (2 × conc.)
	PCR-377L	10 × 1,25 ml (2 × conc.)



### Good to know: ROX

The reference dye normalizes non-PCR induced fluctuations of fluorescence signal. These variations can be caused either by the PCR cycler (different light intensities between wells) or by pipetting differences.

ROX has no influence on the PCR reaction but ensures a stable fluorescence baseline. Whether ROX (low/high) is required depends on the type of cycler (check operating manual).

**All Jena Bioscience qPCR mixes are available in desired ROX format (no/low/high).**

## qPCR Mixes with EvaGreen®

JBS **qPCR GreenMaster Series** is designed for quantitative real-time analysis of DNA samples including High Resolution Melting (HRM) curve analysis. The mixes are recommended for routine PCR applications, high throughput PCR or genotyping.

The fluorescent DNA stain EvaGreen® intercalates into the amplification product during the PCR process and allows the direct quantification of target DNA without the need of sequence-specific labeled probes (i.g. TaqMan® Probes).

The mixes contain all reagents required for qPCR (except template and primers) in a premixed 2 × concentrated ready-to-use solution.

Product	Cat.-No.	Amount
<b>qPCR GreenMaster</b>	PCR-366S	2 × 1,25 ml (2 × conc.)
	PCR-366L	10 × 1,25 ml (2 × conc.)
<b>qPCR GreenMaster lowROX</b>	PCR-367S	2 × 1,25 ml (2 × conc.)
	PCR-367L	10 × 1,25 ml (2 × conc.)
<b>qPCR GreenMaster highROX</b>	PCR-368S	2 × 1,25 ml (2 × conc.)
	PCR-368L	10 × 1,25 ml (2 × conc.)
<b>qPCR GreenMaster UNG</b>	PCR-369S	2 × 1,25 ml (2 × conc.)
	PCR-369L	10 × 1,25 ml (2 × conc.)
<b>qPCR GreenMaster UNG lowROX</b>	PCR-370S	2 × 1,25 ml (2 × conc.)
	PCR-370L	10 × 1,25 ml (2 × conc.)
<b>qPCR GreenMaster UNG highROX</b>	PCR-371S	2 × 1,25 ml (2 × conc.)
	PCR-371L	10 × 1,25 ml (2 × conc.)



### Good to know: HRM

High Resolution Melting (HRM) analysis is a powerful tool for detection of mutations, polymorphisms and epigenetic differences in DNA samples. It is a fast and cost effective alternative to other genotyping technologies.



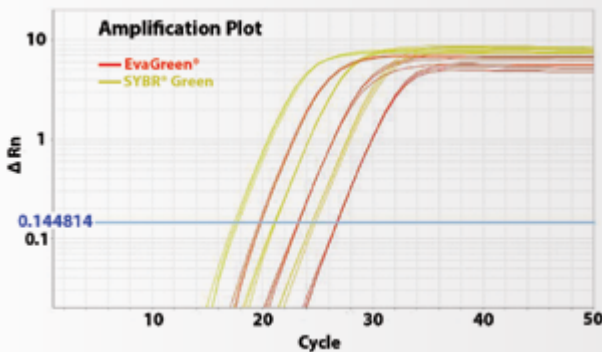
# SYBR or Eva?

Jena Bioscience offers EvaGreen® as well as SYBR® Green since both dyes complement each other. But how do you decide on the right intercalator dye?

The decision often depends on the individual assay and template; however, the following is generally true:

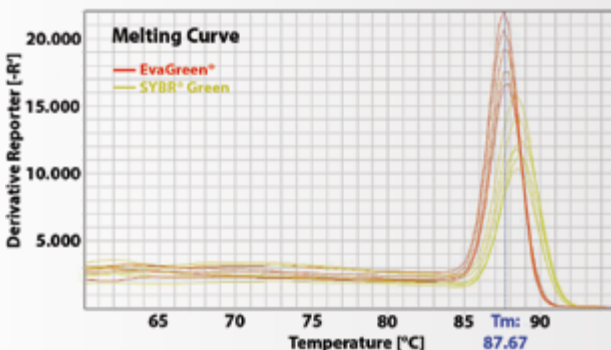
- **SYBR® Green** gives higher amplification efficiency (Fig. 1a) while
- **EvaGreen®** is the gold standard for high resolution melting curve analysis (HRM, Fig. 1b).

Amplification of a 370 bp fragment from bacterial 16S rRNA gene, template: 1 pg / 10 pg / 100 pg *E. coli* DNA per assay:



**Figure 1a:**

SYBR® Green (yellow) shows amplification 2 ct-values earlier than mixes with EvaGreen® (red).



**Figure 1b:**

The melting curve of EvaGreen® mixes (red) shows a sharper slope of the fluorescence intensity allowing precise fragment determination and high resolution melting curve analysis.

## qPCR Mixes for Dual Labeled Probes

JBS **qPCR Master Series** allows quantitative real-time analysis of DNA samples based on detection of labeled DNA probes. Master Mixes contain all reagents required for qPCR (except template, primer and labeled fluorescent probe) in a premixed 2× concentrated solution, including hot-start polymerase.

Mixes are recommended for use with Dual Labeled Fluorescent Probes, e.g. TaqMan®, Molecular Beacons or FRET probes (see page 14).

Product	Cat.-No.	Amount
<b>qPCR ProbesMaster</b>	PCR-360S	2 × 1,25 ml (2 × conc.)
	PCR-360L	10 × 1,25 ml (2 × conc.)
<b>qPCR ProbesMaster lowROX</b>	PCR-361S	2 × 1,25 ml (2 × conc.)
	PCR-361L	10 × 1,25 ml (2 × conc.)
<b>qPCR ProbesMaster highROX</b>	PCR-362S	2 × 1,25 ml (2 × conc.)
	PCR-362L	10 × 1,25 ml (2 × conc.)
<b>qPCR ProbesMaster UNG</b>	PCR-363S	2 × 1,25 ml (2 × conc.)
	PCR-363L	10 × 1,25 ml (2 × conc.)
<b>qPCR ProbesMaster UNG lowROX</b>	PCR-364S	2 × 1,25 ml (2 × conc.)
	PCR-364L	10 × 1,25 ml (2 × conc.)
<b>qPCR ProbesMaster UNG highROX</b>	PCR-365S	2 × 1,25 ml (2 × conc.)
	PCR-365L	10 × 1,25 ml (2 × conc.)



# qPCR Multiplex Mixes



The JBS **qPCR Multiplex Master Series** has been specially developed and optimized for simultaneous real-time analysis of >4 target sequences in a single tube. The system overcomes multiplex limitations of conventional qPCR probe mixes combining with an above-average robustness for a multitude of known PCR inhibitors and an excellent sensitivity for amplification of lowest template amounts.

The 2 × concentrated master mixes contain all reagents required for qPCR (except template, primers and labeled fluorescent probes) including a highly processive antibody-inhibited hot-start polymerase and ultra-pure dNTPs.

All mixes are recommended for use with Dual Labeled Fluorescent Probes, e.g. TaqMan®, Molecular Beacons or FRET probes (see page 14).

Product	Cat.-No.	Amount
<b>qPCR MultiplexMaster</b>	PCR-321S	2 × 1,25 ml (2 × conc.)
	PCR-321L	10 × 1,25 ml (2 × conc.)
<b>qPCR MultiplexMaster lowROX</b>	PCR-322S	2 × 1,25 ml (2 × conc.)
	PCR-322L	10 × 1,25 ml (2 × conc.)
<b>qPCR MultiplexMaster highROX</b>	PCR-323S	2 × 1,25 ml (2 × conc.)
	PCR-323L	10 × 1,25 ml (2 × conc.)



**Good to know: UNG**

Uracil-N-Glycosylase (UNG) specifically cuts uracil from DNA by cleaving its glycosidic bond. This makes it a useful tool to decontaminate PCR assays from previously amplified DNA.

For this the PCR reaction is performed with dUTP instead of dTTP. Before the next run is started, UNG incubation (followed by heat inactivation) prevents potential carry-over-contamination.

## qPCR FastMixes



JBS **Fast qPCR Mixes** are designed for rapid quantification of DNA samples allowing a significant reduction of analysis time.

**Amplification within 30–60 min** combined with high specificity and sensitivity is based on an optimized hot-start polymerase.

All mixes come as 2× concentrated ready-to-use solutions with or without ROX. Just make your selection between mixes with SYBRGreen or mixes for probe based detection.

Product	Cat.-No.	Amount
<b>Fast qPCR ProbesMaster</b>	PCR-383S	2 × 1,25 ml (2 × conc.)
	PCR-383L	10 × 1,25 ml (2 × conc.)
<b>Fast qPCR ProbesMaster highROX</b>	PCR-384S	2 × 1,25 ml (2 × conc.)
	PCR-384L	10 × 1,25 ml (2 × conc.)
<b>Fast qPCR SybrMaster</b>	PCR-385S	2 × 1,25 ml (2 × conc.)
	PCR-385L	10 × 1,25 ml (2 × conc.)
<b>Fast qPCR SybrMaster highROX</b>	PCR-386S	2 × 1,25 ml (2 × conc.)
	PCR-386L	10 × 1,25 ml (2 × conc.)



### Good to know: Why Hot Start Polymerase in qPCR?

Standard thermostable polymerases (e.g. Taq) show optimal performance around 70°C. Nevertheless, a remaining enzymatic activity at room temperature may lead to unspecific products.

If using Hot Start Technology, the polymerase activity is blocked at ambient temperature and switched on automatically at the onset of the initial denaturation. The thermal activation prevents the extension of nonspecifically annealed primers and primer-dimer formation at low temperatures during PCR setup.

**All Jena Bioscience real-time PCR mixes are provided with Hot Start Polymerase to ensure both easy handling and maximum specificity.**

# qPCR Lyophilisates



Jena Bioscience **Real-Time PCR Lyophilisates** are designed for quantitative DNA analysis in real-time based on fluorescent DNA stains or labeled probes.

Upon request all mixes are also available with low ROX as reference dye for cyclor-internal signal normalisation.

Just get in touch ([prc@jenabioscience.com](mailto:prc@jenabioscience.com)).

**qPCR SybrMaster Lyophilisate** is based on fluorescent DNA stain SYBR® Green. No sequence-specific labeled probes are needed.

Product	Cat.-No.	Amount
<b>qPCR SybrMaster Lyophilisate</b>	PCR-173S	192 reactions × 20 µl
	PCR-173L	960 reactions × 20 µl
<b>qPCR SybrMaster Lyophilisate highROX</b>	PCR-174S	192 reactions × 20 µl
	PCR-174L	960 reactions × 20 µl

**qPCR GreenMaster Lyophilisate** is based on fluorescent DNA stain EvaGreen®. No sequence-specific labeled probes are needed.

Product	Cat.-No.	Amount
<b>qPCR GreenMaster Lyophilisate</b>	PCR-157S	192 reactions × 20 µl
	PCR-157L	960 reactions × 20 µl
<b>qPCR GreenMaster Lyophilisate highROX</b>	PCR-170S	192 reactions × 20 µl
	PCR-170L	960 reactions × 20 µl

JBS **qPCR ProbesMaster Lyophilisate** is based on detection of labeled DNA probes. Mixes are recommended for use with Dual Labeled Fluorescent Probes, e.g. TaqMan®, Molecular Beacons or FRET probes.

Product	Cat.-No.	Amount
<b>qPCR ProbesMaster Lyophilisate</b>	PCR-156S	192 reactions × 20 µl
	PCR-156L	960 reactions × 20 µl
<b>qPCR ProbesMaster Lyophilisate highROX</b>	PCR-168S	192 reactions × 20 µl
	PCR-168L	960 reactions × 20 µl

# Dual Labeled Fluorescent Probes

**Dual Labeled Fluorescent Probes** are DNA oligonucleotides of 20–30 bp carrying a fluorophore (5'-end) and a quencher (3'-end). The labeled probe hybridizes sequence-specifically to its complementary section of the amplicon. During DNA extension of each PCR cycle, the fluorophore reporter is cleaved and released. The resulting detectable fluorescence signal is proportional to the amount of accumulated PCR product. All labeled probes are purified by HPLC and quality checked by MALDI-TOF. Select from Jena Bioscience's extensive reporter/quencher repertoire or inquire for alternative combinations ([info@jenabioscience.com](mailto:info@jenabioscience.com)).

## BHQ-1 Quencher

5' ATTO-425 / 3' BHQ-1<sup>®</sup>  
 5' LC<sup>®</sup>Cyan500 / 3' BHQ-1<sup>®</sup>  
 5' 6-FAM / 3' BHQ-1<sup>®</sup>  
 5' Fluo / 3' BHQ-1<sup>®</sup>  
 5' FITC / 3' BHQ-1<sup>®</sup>  
 5' ATTO-495 / 3' BHQ-1<sup>®</sup>  
 5' TET / 3' BHQ-1<sup>®</sup>  
 5' ATTO-520 / 3' BHQ-1<sup>®</sup>  
 5' JOE / 3' BHQ-1<sup>®</sup>  
 5' Yakima Yellow / 3' BHQ-1<sup>®</sup>  
 5' HEX / 3' BHQ-1<sup>®</sup>  
 5' ATTO-Rho6G / 3' BHQ-1<sup>®</sup>

## BHQ-2 Quencher

5' 6-FAM / 3' BHQ-2<sup>®</sup>  
 5' Fluo / 3' BHQ-2<sup>®</sup>  
 5' FITC / 3' BHQ-2<sup>®</sup>  
 5' TET / 3' BHQ-2<sup>®</sup>  
 5' HEX / 3' BHQ-2<sup>®</sup>  
 5' ATTO-Rho6G / 3' BHQ-2<sup>®</sup>  
 5' Cy3 / 3' BHQ-2<sup>®</sup>  
 5' TAMRA / 3' BHQ-2<sup>®</sup>  
 5' ROX / 3' BHQ-2<sup>®</sup>  
 5' TexasRed / 3' BHQ-2<sup>®</sup>  
 5' LC<sup>®</sup>Red610 / 3' BHQ-2<sup>®</sup>  
 5' ATTO-Rho13 / 3' BHQ-2<sup>®</sup>  
 5' DY-480XL / 3' BHQ-2<sup>®</sup>  
 5' LC<sup>®</sup>Red640 / 3' BHQ-2<sup>®</sup>  
 5' ATTO-Rho14 / 3' BHQ-2<sup>®</sup>  
 5' Cy5 / 3' BHQ-2<sup>®</sup>  
 5' Cy5.5 / 3' BHQ-2<sup>®</sup>  
 5' IRD700 / 3' BHQ-2<sup>®</sup>

## BHQ-3 Quencher

5' ATTO-Rho13 / 3' BHQ-3<sup>®</sup>  
 5' LC<sup>®</sup>Red640 / 3' BHQ-3<sup>®</sup>  
 5' ATTO-Rho14 / 3' BHQ-3<sup>®</sup>  
 5' Cy5 / 3' BHQ-3<sup>®</sup>  
 5' Cy5.5 / 3' BHQ-3<sup>®</sup>  
 5' IRD700 / 3' BHQ-3<sup>®</sup>

## BBQ<sup>®</sup>-650 Quencher

5' HEX / 3' BBQ<sup>®</sup>-650  
 5' ATTO-Rho6G / 3' BBQ<sup>®</sup>-650  
 5' Cy3 / 3' BBQ<sup>®</sup>-650  
 5' TAMRA / 3' BBQ<sup>®</sup>-650  
 5' ROX / 3' BBQ<sup>®</sup>-650  
 5' TexasRed / 3' BBQ<sup>®</sup>-650  
 5' LC<sup>®</sup>Red610 / 3' BBQ<sup>®</sup>-650  
 5' ATTO-Rho13 / 3' BBQ<sup>®</sup>-650  
 5' DY-480XL / 3' BBQ<sup>®</sup>-650  
 5' LC<sup>®</sup>Red640 / 3' BBQ<sup>®</sup>-650  
 5' ATTO-Rho14 / 3' BBQ<sup>®</sup>-650  
 5' Cy5 / 3' BBQ<sup>®</sup>-650  
 5' Cy5.5 / 3' BBQ<sup>®</sup>-650  
 5' IRD700 / 3' BBQ<sup>®</sup>-650

## ECLIPSE Quencher

5' ATTO-390 / 3' ECLIPSE  
 5' ATTO-425 / 3' ECLIPSE  
 5' LC<sup>®</sup>Cyan500 / 3' ECLIPSE  
 5' 6-FAM / 3' ECLIPSE  
 5' Fluo / 3' ECLIPSE  
 5' FITC / 3' ECLIPSE  
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 5' JOE / 3' ECLIPSE  
 5' Yakima Yellow / 3' ECLIPSE  
 5' HEX / 3' ECLIPSE  
 5' ATTO-Rho6G / 3' ECLIPSE

5' Cy3 / 3' ECLIPSE

5' TAMRA / 3' ECLIPSE  
 5' ROX / 3' ECLIPSE  
 5' TEXAS RED / 3' ECLIPSE  
 5' LC<sup>®</sup>Red610 / 3' ECLIPSE

## DABCYL Quencher

5' ATTO-390 / 3' DABCYL  
 5' ATTO-425 / 3' DABCYL  
 5' LC<sup>®</sup>Cyan500 / 3' DABCYL  
 5' 6-FAM / 3' DABCYL  
 5' Fluo / 3' DABCYL  
 5' FITC / 3' DABCYL  
 5' ATTO-495 / 3' DABCYL  
 5' TET / 3' DABCYL  
 5' ATTO-520 / 3' DABCYL  
 5' JOE / 3' DABCYL  
 5' Yakima Yellow / 3' DABCYL  
 5' HEX / 3' DABCYL  
 5' ATTO-Rho6G / 3' DABCYL  
 5' TAMRA / 3' DABCYL

## TAMRA Quencher

5' ATTO-390 / 3' TAMRA  
 5' ATTO-425 / 3' TAMRA  
 5' 6-FAM / 3' TAMRA  
 5' Fluo / 3' TAMRA  
 5' FITC / 3' TAMRA  
 5' ATTO-495 / 3' TAMRA  
 5' TET / 3' TAMRA  
 5' ATTO-520 / 3' TAMRA  
 5' JOE / 3' TAMRA  
 5' Yakima Yellow / 3' TAMRA  
 5' HEX / 3' TAMRA  
 5' ATTO-Rho6G / 3' TAMRA  
 5' ROX / 3' TAMRA  
 5' Cy5.5 / 3' TAMRA  
 5' IRD700 / 3' TAMRA

# qPCR Supplements

To enable maximum flexibility in the setup and optimization of real-time mixes Jena Bioscience also offers components and reagents separately.

We provide useful tools for functional testings such as polymerase quality & assay optimization.

Product	Cat.-No.	Amount
<b>Thermolabile UNG (Uracil N-Glycosylase)</b>	PCR-353	200 units
<b>EvaGreen® Fluorescent DNA Stain</b>	PCR-379	500 µl (100 µM)
<b>Sybr®Green Fluorescent DNA Stain</b>	PCR-378	500 µl (100 µM)
<b>ROX Reference Dye</b>	PCR-351	1 ml (25 µM)
<b>Fluorescein Reference Dye</b>	PCR-355	1 ml (10 µM)
<b>qPCR Control Kit</b>	PCR-354	500 reactions



## Molecular Biology & Proteins

For your questions regarding  
**Real-Time PCR** contact  
me directly:

[pcr@jenabioscience.com](mailto:pcr@jenabioscience.com)



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**info@stratech.co.uk**  
**stratech.co.uk**

Test the exceptional performance  
of our Real-Time Mixes for yourself.

# Request a sample!

Our entire product range is available as samples.



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DIN EN ISO 9001 and DIN EN ISO 14001  
Reg.-No. ICV03597 034 and ICV03597 534

ACCCACGAAAGGGAA ATAAGC AACO TTCAGGGAAGAA CTAUAAGTGGCCAC ACCCAGAAAGGGAA ATAAGC AACO TTCAGGGA  
TTCAGGGAAGAA CTAUAAGTGGCCAC ACCCAGAAAGGGAA ATAAGC AACO TTCAGGGAAGAA CTAUAAGTGGCCAC ACCCAG  
GAAAGGGAA ATAAGC AACO TTCAGGGAAGAA CTAUAAGTGGCCAC ACCCAGAAAGGGAA ATAAGC AACO TTCAGGGAAGAA