# CATALOG

14th Edition

## NIPPON Genetics EUROPE

Innovation For You

Electrophoresis (DNA/RNA) · Electrophoresis (Protein) · Gel Doc. · NAP-Kits · Cloning · RT-(q)PCR Enzymes · Lab Plastic · Lab Instruments · Cell Biology


**Your distributor in Switzerland**

LubioScience GmbH
Baumackerstrasse 24
8050 Zürich

+41 (0)41 417 02 80

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www.lubio.ch

# CONTENT

# COMPANY PROFILE

NIPPON Genetics EUROPE GmbH


## NIPPON Genetics EUROPE - Our Company

NIPPON Genetics is a Japanese Life-Tech company, focused on cutting edge products for molecular and cell biology laboratories. We have been working to help researchers in making the bright future they envision a reality.

NIPPON Genetics EUROPE GmbH was founded in 2004. We are a growing group of highly motivated people with a strong background in life-science research. In the past few years, we have become a team that can support you not only with innovative products but also with advice on applications. This background also allows us to understand the needs of the customer and to develop new and exciting products for you.

We provide a wide variety of products, including gel documentation systems without UV-light, safe DNA-stains, cell freezing media, RT- (q) PCR enzymes, lab plastics and many more. We deliver these products to researchers around the globe working at universities, research institutes, pharmaceutical and biotech companies and/or clinical laboratories. Continuously growing our portfolio and expanding the cooperation with companies and scientists across the world, NIPPON Genetics EUROPE wants to provide the best service and solution for your research requirements.

**1988** — Foundation of NIPPON Genetics Co. Ltd in Japan

**2004** — Foundation of NIPPON Genetics EUROPE GmbH in Germany

**2006** — Introduction of our FastGene® brand

**2008** — Introduction of the MIDORI$^{Green}$ Dyes

**2010** — Establishment of a German Sales Team

# COMPANY PROFILE

NIPPON Genetics EUROPE GmbH

## Our Philosophy

The foundation of our business is contribution.

Things that researchers need for their research, things that help them, solutions for problems. We devote ourselves to providing researchers with these things, and this forms the foundation of our company.

As for the employees who support this foundation, we look for people with the human power required to make a positive contribution. Putting in the right kind of effort so that we can grow in the right way and help our customers make the important decisions when it matters. That's the kind of organization we are building.

**Kazuo Yamazaki**
CEO of NIPPON Genetics Co. Ltd in Japan

**2011**
Introduction of the Cell Freezing Media Bambanker

**2014**
Introduction of the unique Blue/Green Excitation Light

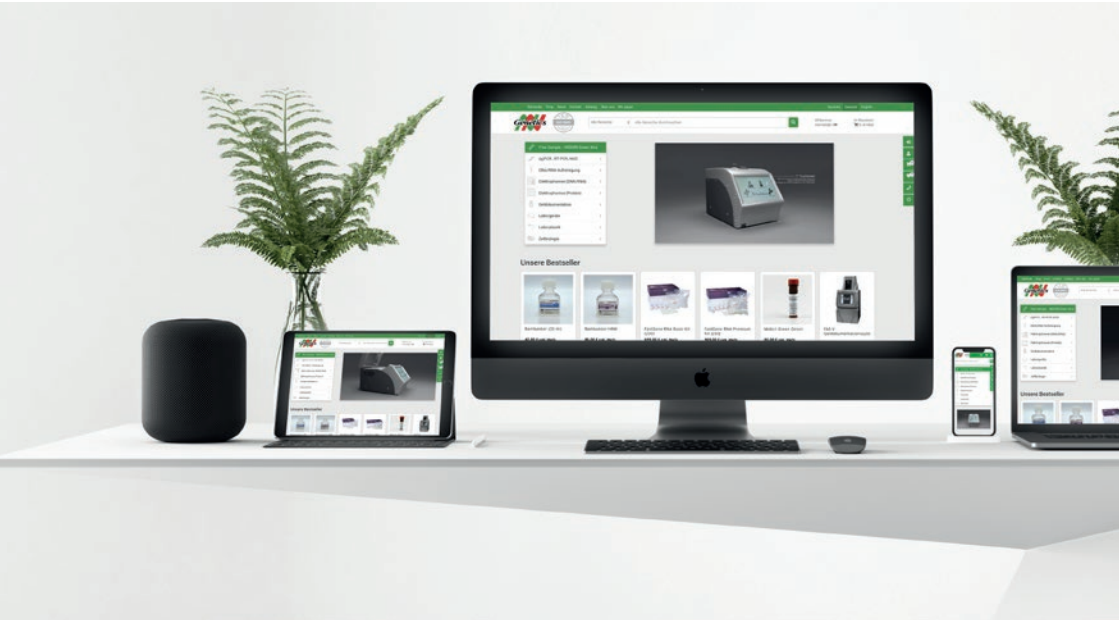
**2016**
Introduction of the RNA-Purification Kits

**2018**
ISO 9001:2015 Certification for Quality Management

**2020**
New Office Building with increase in Warehouse size

# Website

**www.nippongenetics.eu**




## Our Website

We see our website as our central information source for you! Here you can find more information about all our produts. You need a manual, MSDS, safety report or other material? No problem, just enter our website and download everything you need. We are always glad to receive your feedback about our service and products. Therefore, you will find a lot of customer testimonials - our mission is to improve our service and to focus on our customers.

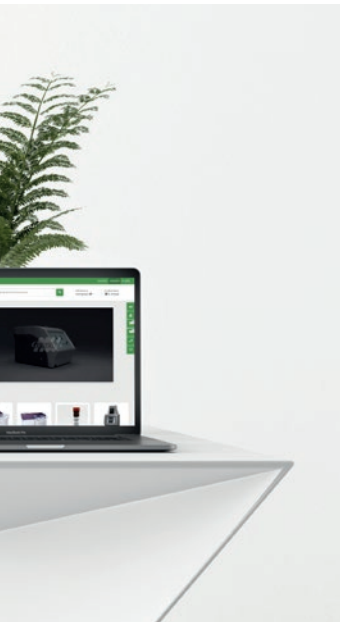
You can also find Technical Notes about many of our products, which we create with scientific enthusiasm in our laboratory. Furthermore, we get great feedback from the scientifc society, which leads to the creation of many Application Notes.

Customers from Germany, Austria and the Netherlands can directly order products in our webshop. Every product page is in English or alternatively in German and a large number of product pages is also available in French.

www.nippongenetics.eu

# Quality Management

ISO 9001:2015 certified



## ISO 9001:2015 certification

NIPPON Genetics EUROPE has always been a quality driven company: Quality of our products but also the quality of our service. It was important for us to show this quality-driven ideology and therefore we have decided to certify our quality management system according to ISO 9001:2015. We are very proud to announce that we were certified straight away in the first attempt, showing that our idea of analyzing, reflecting and improving is key to maintain our high-standard.

We see the ISO 9001:2015 as a central tool to improve our quality continuously. Hence, we will be performing a regular audit to ensure that the company still works according to the standard definide in ISO 9001:2015.

NIPPON Genetics EUROPE is certified in accordance with the standard DIN EN ISO 9001: 2015 (Management System)

# Management Team

NIPPON Genetics EUROPE GmbH


**Dr. Jürgen Lünzer**
*Managing Director*
jluenzer@nippongenetics.de

**Dr. Oliver Schwarz**
*Sales & Marketing Manager*
oschwarz@nippongenetics.de

## Our Management Team

Dr. Jürgen Lünzer founded the company in 2004, with the support of our Japanese colleagues, mainly focused on international sales. In the beginning, the main objective was to start cooperation with other brands and distributors.

In the year 2010, Jürgen invited his long-term colleague Dr. Oliver Schwarz to join the company. Similar to Jürgen, Oliver had acquired deep knowledge about the Life-Science industries over the years and was therefore the perfect candidate to lead the German sales team.

In 2014, Dr. Marcelo Lanz joined the team for product management and international sales. Due to the continuous successful growth of the NIPPON Genetics EUROPE product portfolio, we decided in 2018 to increase the product management team and Dr. Manuel Franke joined our company. In 2020, we are delighted to welcome Dr. Verena Krieger.

We at NIPPON Genetics EUROPE see us a science-driven, technology-loving and innovation-seeking team still continuously looking for new opportunities to keep this success story going.

# Int. Sales, Tech and Marketing Team

NIPPON Genetics EUROPE GmbH




## Become a GeneF@n member

GeneF@n is our exclusive club to get special promotions for our satisfied customers. Only GeneF@n members have the big advantage to receive continuous discounts and promotions on our products. Furthermore, as a GeneF@n member you can order free samples for our consumables.

Learn about new Application and Technical Notes. Here you will find helpful information to improve your experiments, which make your daily lab routine much easier.

GeneF@n

Gene F@N™

Join now GeneF@n and become an exclusive member - Special promotions and more are waiting for you.

# National Sales Team

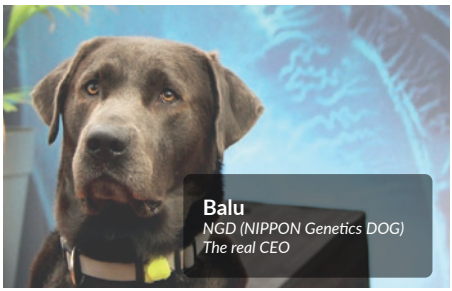
NIPPON Genetics EUROPE GmbH


| Postcode area | Supervisor | Contact information |
|---|---|---|
| 01000 - 34999<br>37000 - 39999<br>99000 - 99999 | **Nenad Marić** | nmaric@nippongenetics.de<br>+49 (0)170 3422593 |
| 40000 - 54999 | **Dr. Kristina Kux** | kkux@nippongenetics.de<br>+49 (0)1713352548 |
| 35000 - 36999<br>55000 - 79999<br>88000 - 89999 | **Ina Dutzi-Kirchner** | idutzi@nippongenetics.de<br>+49 (0)1712012220 |
| 80000 - 87999<br>90000 - 96999<br>97000 - 98999<br>Austria | **Björn Krietemeyer** | bkrietemeyer@nippongenetics.de<br>+49 (0)15142116899 |

# Office & Logistic Management

NIPPON Genetics EUROPE GmbH





## We care about you personally

We would be pleased to advise you personally on site and demonstrate to you the products in which you are interested. For Germany, Austria and the Netherlands, we offer our products directly to our customers. Just contact your personal product specialist of our national sales team (left page) and make an appointment for a product demonstration.

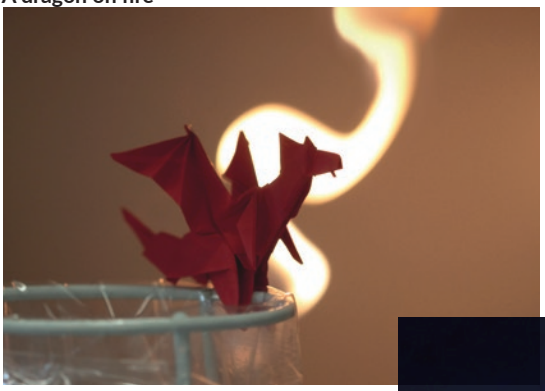
Our dedicated logistic team will prepare your shipment very carefully and fast to guarantee short delivery times. We deliver our products worldwide from our warehouse in Düren, Germany. In our workshop, we manufacture with high quality awareness a selected group of our products. Furthermore, we repair our instruments, in the rare cases of defects, by ourselves.

We educate young people to work with us and help our customers all over the world, as we believe that a central objective of a company is to transfer the knowledge we established to the next generation.

# Origami - Competition

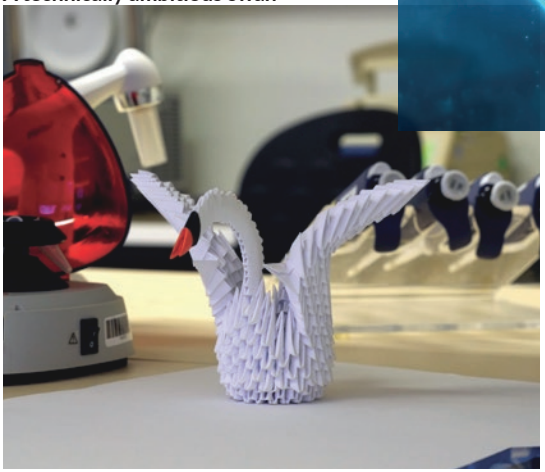
NIPPON Genetics EUROPE
GmbH

**A dragon on fire**



**A dragon on Blue/Green light**

**A technically ambitious swan**



## Our winners of the Origami-Competition

Last year we organized our first Origami-Competition. Our customers fold their desired origami and sent us photos of them in a lab environment. Because of so many lovely and creative pictures, we had big problems to select 3 winners. We hope that the lucky winners are happy with their prizes. Yes, we love dragons.

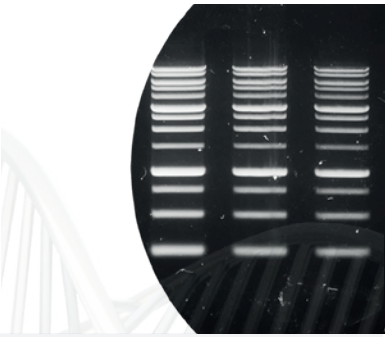
# Origami - Competition

NIPPON Genetics EUROPE GmbH


## Small selection of all Origami pictures

Many thanks to everyone who participated at our Origami-Competition and sent us lovely and creative pictures! You have sweetened our days.

# New Products



## MIDORI[Green] Xtra Agarose Tablet

MIDORI[Green] Xtra is a new, highly sensitive green fluorescent stain for a safe visualization of DNA and RNA in agarose gels. It now comes in an agarose tablet format. Just add buffer or what and cast your gel.

DNA Electrophoresis

**Page: 25**


## FastGene® Western ECL Kit

The FastGene® Western ECL Kit was designed to deliver a very sensitive signal when using HRP-secondary antibodies.

Protein Electrophoresis

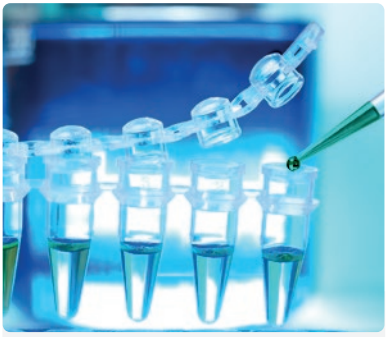
**Page: 37**

## FastGene® Restriction Enzymes

The FastGene® Restriction Enzymes are perfect for your routine cloning experiments. With 115 different enzymes you will find what you need. Use our Enzyme-Finder to locate your suitable enzyme. Here you can search by name recognition sequence or overhang.

Cloning

**Page: 86**



## FastGene® 0.1 ml PCR Tubes

In addition to our 0.2 ml PCR Tubes, we now also have tubes for 0.1 ml. These tubes are available as single tubes or as practical 8-well strips.

Lab Plastic

**Page: 117**

# New Products




## FastGene® FAS-Digi PRO

The FastGene® FAS-Digi PRO is our newest imaging system for the detection of DNA and RNA in agarose gels. Equipped with a light-sensitive 24 MPixel camera, the FAS-Digi PRO is controlled completely by our newly developed imaging software.

Gel Documentation **Page: 52**


## FastGene® miRNA Enhancer Buffer

Purify small RNA molecule using this addition to our regular RNA purification kit. You can purify RNA with miRNA or only miRNA. You have the choice.

Nucleid Acid Purification **Page: 76**


## FastGene® UltraCycler

The FastGene® UltraCycler has a thermal gradient, a gorgeous touchscreen and is compatible with a wide range of 0.2 ml PCR tubes and 96-well plates. Furthermore, the UltraCycler has a very fast ramp rate for a quick PCR.

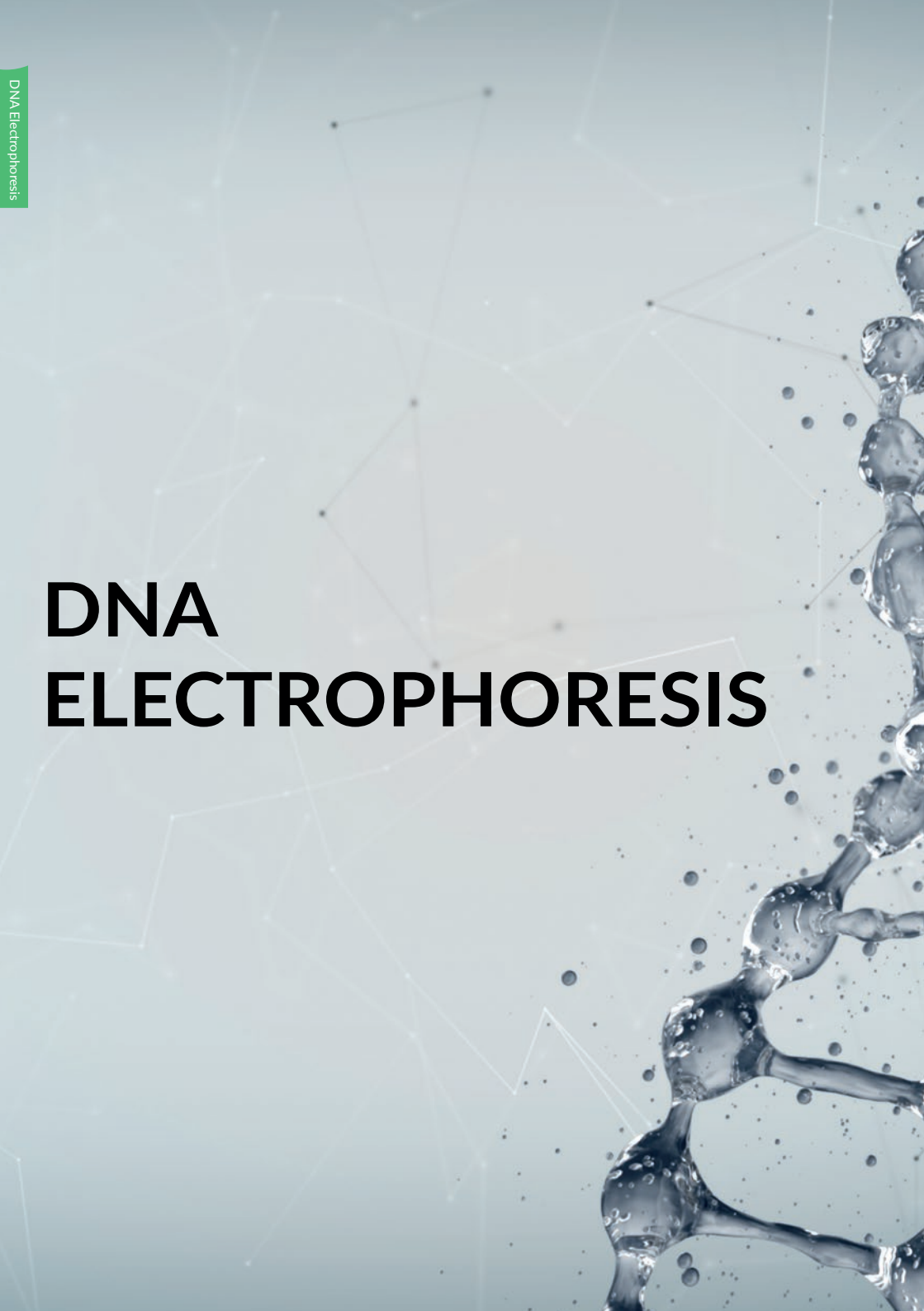
Lab Instruments **Page: 130**


## StemFit®

StemFit® is a new culture medium for embryonic stem cells and iPS cells. This medium is recommended by the nobel prize winner Shin'ya Yamanaka and allows very reproducible growth rates under feeder-free and xeno-free conditions.

Cell Biology **Page: 144**

# DNA ELECTROPHORESIS

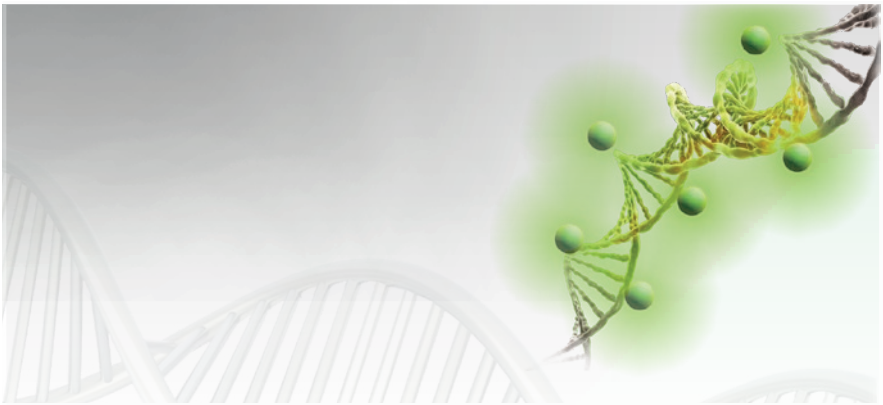




## CONTENT

# MIDORI[Green] Xtra

*DNA stain with the strongest signal*



- Staining of DNA/RNA in agarose gels
- Ultra-sensitive
- Safe DNA dye
- Optimal for Blue/Green LED and Blue LED light
- Almost no background

## MIDORI[Green] Xtra: The revolution

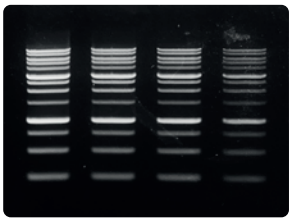
MIDORI[Green] Xtra is a new highly sensitive green fluorescent stain for a safe visualization of DNA and RNA in agarose gels. This DNA stain is a safe and better alternative to the traditional nucleic acid stain ethidium bromide (EtBr). Remarkably, agarose gels stained with MIDORI[Green] Xtra have a very low background fluorescence, which makes the identification of low amounts of DNA very easy.

## Proven safety

MIDORI[Green] Xtra delivers even better DNA/RNA signals than ethidium bromide. However, this innovative DNA stain is non-carcinogenic, non-mutagenic and non-toxic and therefore not harmful for your health. Independent laboratories confirmed its safety: Both the mutagenicity test (Ames-Test) and the cytotoxicity test were negative.

## Optimal for Blue/Green LED technology

MIDORI[Green] Xtra is optimized for Blue/Green and Blue LED light, leading to unbeatable fluorescence signals of DNA and RNA in agarose gels. In addition, UV-light is also suitable for the detection of nucleic acid, but less efficient than non-damaging visible light. Remarkably, MIDORI[Green] Xtra did not stain the agarose gel, leading to an excellent signal to noise ratio.



Ultra-high sensitivity of DNA bands detected with MIDORI[Green] Xtra (dilution factor 1:25000) using with a Blue/Green LED transilluminator.

**Safe DNA stain with an unbeatable sensitivity**

- ✔ Ames-Test
- ✔ Cytotoxicity Test

# MIDORI[Green] Xtra

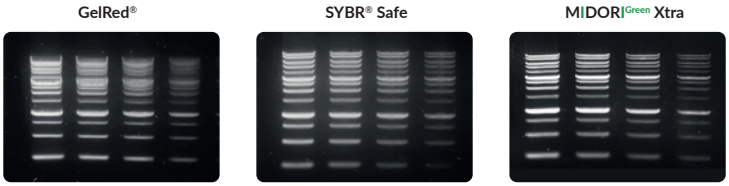
*DNA stain with the strongest signal*


## Simply the best

MIDORI[Green] Xtra leads to unbeatable fluorescence signals of nucleic acids. The direct comparison with the popular DNA dyes GelRed® and SYBR® Safe shows, that MIDORI[Green] Xtra reaches new levels of sensitivity: Even the detection of the smallest quantities of DNA or RNA is possible. But don't take our word for it - try them for yourself! Just contact us, and get your free sample.

## No changes in electrophoresis mobility and band distortion

The in-gel staining of agarose gels can cause a distortion of DNA bands and can result in a change of the migration pattern. However, with MIDORI[Green] Xtra you never have problems with distorted DNA bands and you obtain always the same migration pattern, even at different DNA concentrations. Look at the Tech Note at the next page for more information.




Comparison of the sensitivity between GelRed®, SYBR® Safe and MIDORI[Green] Xtra using a Blue/Green LED transilluminator. For each gel we loaded different amounts of our DNA Marker MWD1P (Page 29) (10 µL, 7.5 µL, 5 µL and 2.5 µL).

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| MG10 | MIDORI[Green] Xtra | 1 ml (staining up to 25 liters of agarose) |

# MIDORI[Green] Xtra

## Happy customers

MIDORI[Green] Xtra is a new and safe stain for the detection of DNA in agarose gels. This dye has been already used very successfully by several laboratories. The feedback from the scientific society is very positive. Especially with Blue/Green LED, MIDORI[Green] Xtra leads to fantastic results.

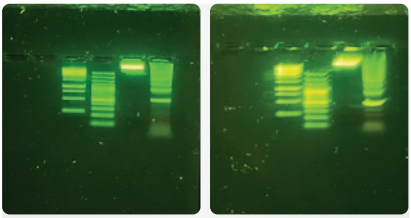
**Still destroying your DNA with UV-light?**
**Try the new Blue/Green LED technology!**

BLUE GREEN BGLED

**Page: 40**

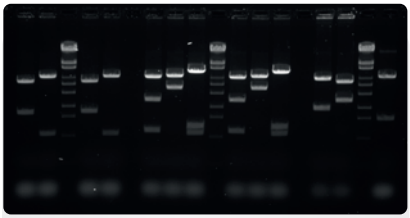
**MIDORI[Green] Xtra**
(4 µl, 100 ml agarose gel)

**SYBR® Safe**
(7 µl, 100 ml agarose gel)



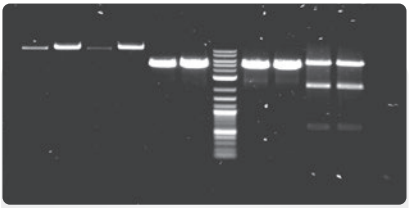
**German Researcher**
University of Göttingen

Images were taken with a phone on a Blue/Green LED Transilluminator (FG-09).



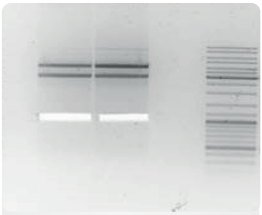
**Sandra Gebauer**
University Medical Center Göttingen

Images were taken with the FAS-V gel doc system. 2 µl MIDORI[Green] Xtra in 150 ml TAE buffer (1% gel).



**German Researcher**
University of Hannover

Images were taken with a Blue/Green LED gel doc system. 2 µl MIDORI[Green] Xtra in 100 ml liquid 1% agarose.



**Adivo GmbH**
Martinsried, Germany

Images were taken with the FAS Digi. 4 µl MIDORI[Green] Xtra in 100 ml 1% agarose.

**Customer Testimonial**

*"Overwhelming results with Blue LED light. Much better than Ethidium bromide!"*

**Japanese Researcher**
Jichi Medical University
Department of Regenerative Medicine, Shimotsuke, Japan

★★★★★

**Technical Note**
2018 <06>

## Technical Data — Product evaluation of MIDORI$^{Green}$ Xtra in DNA staining

### Purpose

Evaluate the performance of the new staining reagent MIDORI$^{Green}$ Xtra by using the in-gel staining method.

### Background

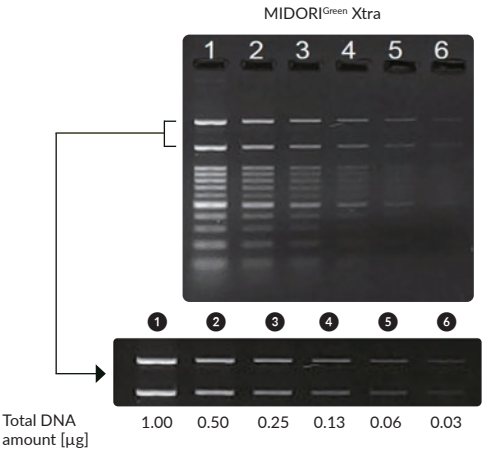
One method of staining DNA separated by gel electrophoresis is the "in-gel" staining method. For in-gel staining, electrophoresis is carried out using a gel containing nucleic acid staining reagent. Therefore, it is possible to observe the electrophoresis result without requiring DNA staining process. However, it can come to a distortion of the bands and there is a risk of causing a change in migration pattern, which should be molecular weight dependent. For this reason, in addition of being able to detect the band with high sensitivity, the reagent used for in-gel staining should precisely separate the DNA by size.

### Experimental procedure

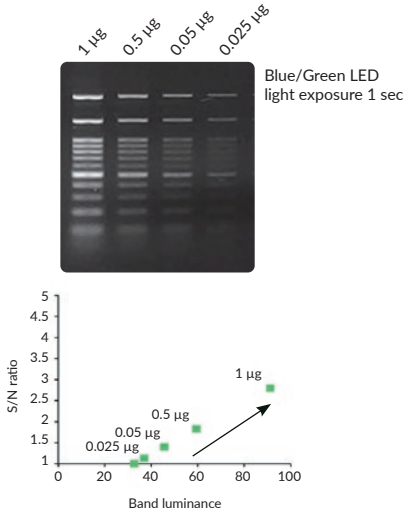
1) Gel preparation 2.0% TAE agarose gel with MIDORI$^{Green}$ Xtra (4 µl for a 100 ml gel)
2) DNA sample: 100 bp DNA ladder, 0.1 µg/µl (FastGene® MWD100)
3) Agarose gel electrophoresis: 100 V, 30 min
4) Gel doc system: FAS-Digi (GP-05LED) with Blue/Green LED light
5) Images were analyzed with Image J and the band luminance and S/N ratio were calculated for the 100 bp band

### Result

**① Influence on band formation**




**② Band luminance and S/N ration**




### Summary

- MIDORI$^{Green}$ Xtra is a reagent with no changes in electrophoretic mobility and band distortion.
- MIDORI$^{Green}$ Xtra is a DNA staining reagent that enables lower background and higher signal-to-noise ratio.

→ MIDORI$^{Green}$ Xtra has the ideal properties for the in-gel staining method with Blue/Green LEDs.

# MIDORI[Green] Advance

## In-gel staining of its best

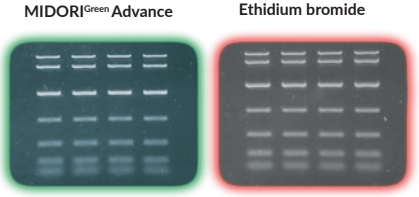
MIDORI[Green] Advance is a safe alternative to the traditional nucleic acid stain ethidium bromide. It is a non-carcinogenic and less mutagenic dye for detecting dsDNA, ssDNA and RNA in agarose gels with a very high sensitivity. MIDORI[Green] Advance can utilize with UV-light or with our innovative Blue/Green LED technology.

- Perfect staining of DNA/RNA in agarose gels
- Non-toxic, non-carcinogenic
- Safe alternative to ethidium bromide
- High fluorescence
- Optimal for UV-light

- Ames-Test
- Acute Oral Toxicity Test
- Chromosome Aberration Test
- Mouse Bone Marrow Micronucleus Test
- Latex and Nitrile Gloves Penetration Test

## Safe alternative to ethidium bromide

MIDORI[Green] Advance is a non-carcinogenic dye. Optimised for a brighter signal when excited by UV-light or Blue/Green light. It has the advantages, such as being non-carcinogenic and having an excellent noise-to-signal ratio. MIDORI[Green] Advance shows a very high sensitivity even for small DNA fragments. The dilution factor of MIDORI[Green] Advance can be as high as 1:25000. Hence, 4-6 µl are enough for the staining of a 100 ml agarose gel, resulting in ~17 to 25 liters of stained agarose gels.




Comparison of sensitivity between MIDORI[Green] Advance and ethidium bromide using a UV-transilluminator.

## Proven Safety

It is essential for a good replacement of the mutagenic DNA stain ethidium bromide to deliver strong signals. MIDORI[Green] Advance delivers signals with a comparable intensity. Nonetheless, the safety of the user must not be compromised. Hence, several tests were performed with MIDORI[Green] Advance and according to those tests, MIDORI[Green] Advance is safe.

## Staining RNA with MIDORI[Green] Advance

**Method:**
RNA samples were separated on a 1% agarose gel stained with MIDORI[Green] Advance (Fig. 1) or with ethidium bromide (Fig. 2). Lane 1 and 2: 0.5 µg of RNA. Lane 3: 0.3 µg of RNA. Lane 4: 0.7 µg of RNA. The separation of the RNA was performed using a 1x TBE Buffer and 100 V for 1 hour.

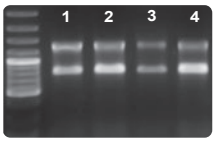



**Fig. 1:** RNA stained using MIDORI[Green] Advance. The two bands represent the major rRNA of 28S and 18S.

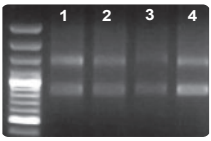



**Fig. 2.** RNA stained using ethidium bromide. The two bands represent the major rRNA of 28S and 18S.

**Results/Conclusion:**
MIDORI[Green] Advance delivered superior image quality and very distinctive bands indicating the presence of the expected 28S and 18S rRNA bands. Bands intensity correspond to the amount of RNA and the predicted bands were visible and distinctive.

Data kindly provided by Ms Kirstin Linsmeier, University of Heidelberg, Germany

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| MG04 | MIDORI[Green] Advance | 1 ml (staining up to 25 liters of agarose) |

# MIDORI[Green] Direct

## In-sample staining for the strongest signal

MIDORI[Green] Direct stain represents a safe nucleic acid stains for visualisation of double-stranded DNA, single-stranded DNA and RNA in agarose gels. In contrast to most other non-ethidium bromide based dyes, MIDORI[Green] Direct is just added to your samples.

- Direct staining of DNA/RNA
- Non-toxic, non-carcinogenic
- Safe alternative to ethidium bromide
- Loading dye is included
- Very low background

## Safety first

MIDORI[Green] Direct is non-carcinogenic and less mutagenic compared to ethidium bromide. Furthermore, we can state that MIDORI[Green] Direct is impenetrable to latex gloves and cell membranes (Fig 1.). MIDORI[Green] Direct is classified as non-hazardous to aquatic life, under CCR Title 22 regulation. Thus, small amounts of MIDORI[Green] Direct stain can be safely released into the environment.

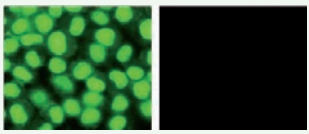



Fig. 1: HeLa cells were incubated at 37°C with SYBR® Green I and MIDORI[Green] Direct. Images were taken following incubation for 30 min. SYBR® Green I entered into cells rapidly as evident from the bright green nuclear staining. However, MIDORI[Green] Direct was unable to cross cell membranes as shown by the lack of any fluorescence staining.

- Ames-Test
- Cytotoxicity Test
- Cell Membrane Permeability
- Hazardous Waste Screening
- Latex Gloves Penetration Test

## The best signal to noise ratio

The direct staining of the DNA rather than the gel eliminates the background staining providing a perfect signal (Fig. 2). MIDORI[Green] Direct was developed to work with Blue LED light and Blue/Green LED light transilluminators, but you can also use it with a regular UV transilluminator.

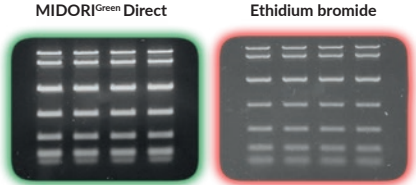



Fig 2.: MIDORI[Green] Direct detected by Blue/Green LED light vs. ethidium bromide detected using UV-light.

## Loading dye

MIDORI[Green] Direct stains are provided in a form of 10X sample loading dyes and they are to be added to your samples only. You do not need to add any other dyes to the gel matrix nor to the running buffers. MIDORI[Green] Direct contains a mixture of orange G and xylene xyanol. In the case you want to add your own loading dye, there is a loading dye free version of MIDORI[Green] Direct as well.

**You do not need to add any other loading dye to both gel matrix and running buffer**

## Better results for downstream applications

The isolation of DNA from agarose gels enables downstream applications. It is well known that many dyes, such as ethidium bromide or even SYBR™ Green are strong enzyme inhibitors due to their intercalating properties. MIDORI[Green] dyes bind to the DNA backbone. This results in a much higher efficiency for downstream applications, i.e. cloning (Fig. 3), sequencing, PCR, etc.

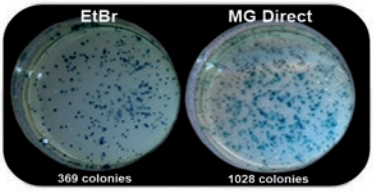



Fig. 3: DNA was isolated from agarose gels stained with ethidium bromide (EtBr) or from unstained agarose, where MIDORI[Green] Direct was used. The isolated DNA was transformed into *E. coli*. The transformed bacteria were plated on selective media and incubated for 16 hours at 37°C.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| MG06 | MIDORI[Green] Direct (with loading dye) | 1 ml |

Technical Note
2018 <01>

## Technical Data

# MIDORI[Green] Advance: Long term storage test (3 months) of prestained gels

### Purpose

MIDORI[Green] Advance was used to prepare a prestained gel. One was used "on the day of making" , another one was used "after 3 months". Each gel was subjected to electrophoresis. Gel images were taken under the same conditions and were compared afterwards.

### Method

1. A prestained gel was prepared:
   1.5% TAE agarose gel | 12.5 ml mini gel | 0.5 µl MIDORI[Green] Advance

2. The prestained gel was used for electrophoresis:
   Condition 1: Used for electrophoresis on the day of creation
   Condition 2: Store at 4°C, after 3 months the gel was used for electrophoresis

3. Electrophoresis and gel imaging conditions:
   - DNA sample: Bioline Easy ladder I (Bio-33045) 5 µl / lane Conc. (250 ng / 5 µl)
   - Electrophoresis: SafeBlue Electrophoresis system (MBE-150 Plus) 100V 30min
   - Gel imaging: FAS-Digi (Pentax MX-1) Blue/Green LED transilluminator

### Prestained gel storage method

Usually, when an agarose gel is refigerated and stored at 4°C, it is ideal to store it in a container containing "the same buffer solution used for gel preparation" in order to prevent drying. However, in the case of a prestained gel, in order to prevent dilution of the staining reagent, it is necessary to add the same concentration of the staining reagent to the storage buffer. Therefore, we did not use buffer for storage this time. We wrapped the gel as it was, shielded with aluminium foil, to avoid light exposure and tried a method to store it with a double plastic bag with zipper.

1. Wrap each gel together with tray.

2. All gels are shaded with alluminium foil.

3. Packed in a plastic bag with double chuck and stored at 4°C.

### Result

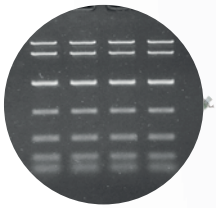
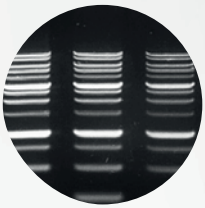
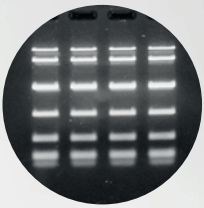
On the day of creation

After 3 months storage

**Summary**

The result of this study shows, that even after refigerating a gel which was stained with MIDORI[Green] Advance for 3 months at 4°C there was no difference in the detection of sensitivity observed and it was possible to use it for electrophoresis without problems.

# MIDORI Green Dyes

| For UV-light | For Blue/Green & Blue LEDs | |
|---|---|---|
| **MIDORI Green Advance**<br>Strongest signals with UV-light | **MIDORI Green Xtra**<br>Unbeatable with visible light | **MIDORI Green Direct**<br>In-sample staining for the strongest signal |
|  | NEW  |  |
| Cat. No.: MG04 / Content: 1ml<br>Sufficient to stain 25-50 liters of agarose | Cat. No.: MG10 / Content: 1ml<br>Sufficient to stain 25 liters of agarose | Cat. No.: MG06 / Content: 1ml<br>Stain up to 2000 samples |
| In-gel & post-staining | | Direct staining of DNA/RNA |

## Free Sample?

Do you want to test our DNA dyes or the Agarose Tablets? No problem! Just give us a call or write us an email and get your free sample very soon.

+49 2421 554960
info@nippongenetics.de
**www.nippongenetics.eu**

# FastGene™ MIDORI Green Agarose Tablets


- **Simple and safe gel pouring**
- **DNA dye is already in the tablet (MIDORI Green Xtra or Advance)**
- **High fluorescence**
- **Only water or buffer needed**
- **Increase your reproducibility and safe time**

## Don't waste time preparing gels!

MIDORI Green Agarose Tablets are a fast, clean solution for preparing agarose gels without any additional time-consuming steps, such as weighing or adding different components. Just add the tablet to pure cold water or buffer, heat, and pour. That's it! Once the gel hardens, it's ready for loading. Each tablet contains the perfect amount of the DNA dye MIDORI Green Xtra or Advance.

**If you're tired of preparing agarose gels for your lab, this is the quickest and easiest solution to reduce effort and improve the quality of your gels.**

## Easy workflow

The fastest workflow to make agarose gels: 1. Add the tablet to pure cold water (when using the tablets with TBE or TAE) or in cold buffer (when using the tablets without buffer); 2. Dissolve the tablet by shaking your solution; 3. Heat the solution until it is clear; 4. Add the solution to your gel tray; 5. Run the gel and detect your DNA bands.

| Add tablet | Shake it | Heat it up | Add to gel tray | Finished |
|---|---|---|---|---|
|  |  |  |  |  |

Check it out on YouTube

# FastGene™ MIDORI[Green] Agarose Tablets

## Choose your tablet

Depending on your needs NIPPON Genetics EUROPE provides 5 different MIDORI[Green] Agarose Tablets: First choose the DNA dye: We offer tablets with MIDORI[Green] Xtra and MIDORI[Green] Advance. You are using TBE or TAE as a buffer? Then use MIDORI[Green] Tablets with TBE or TAE. You want to use your own buffer or a different running buffer? No problem, just use the MIDORI[Green] Agarose Tablets without buffer.

MIDORI[Green] Advance
**TBE** Agarose Tablets
75 tablets (0.5 g agarose each)
***Cat. No.: AG09***

MIDORI[Green] Advance
**TAE** Agarose Tablets
75 tablets (0.32 g agarose each)
***Cat. No.: AG10***

MIDORI[Green] Advance
Agarose Tablets **(without buffer)**
100 tablets (0.5 g agarose each)
***Cat. No.: AG11***

MIDORI[Green] Xtra
**TAE** Agarose Tablets
100 tablets (0.5 g agarose each)
***Cat. No.: AG13***

MIDORI[Green] Xtra
Agarose Tablets **(without buffer)**
100 tablets (0.32 g agarose each)
***Cat. No.: AG12***

## The perfect gel concentration

With the MIDORI[Green] Agarose Tablets (Xtra or Advance) you can achieve your needed gel percentage: Just use the instructions from the tables. Please note that the MIDORI[Green] Agarose Tablets with TAE buffer contain less agarose with each tablet.

Gel concentration for AG09 / AG11 and AG13 (Tablets with **TBE** and **without buffer**)

| Gel | 1 Tablet | 2 Tablets |
|---|---|---|
| 1% | 50 ml $H_2O$ | 100 ml $H_2O$ |
| 1.5% | 33 ml $H_2O$ | 67 ml $H_2O$ |
| 2% | 25 ml $H_2O$ | 50 ml $H_2O$ |

Gel concentration for AG10 and AG12 (Tablets with **TAE** buffer)

| Gel | 1 Tablet | 2 Tablets |
|---|---|---|
| 1% | 32.5 ml $H_2O$ | 65 ml $H_2O$ |
| 1.5% | 21.5 ml $H_2O$ | 43 ml $H_2O$ |
| 2% | 16.25 ml $H_2O$ | 32.5 ml $H_2O$ |

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| AG09 | MIDORI[Green] Advance TBE Agarose Tablets | 75 Tablets (0.5 g Agarose each) |
| AG10 | MIDORI[Green] Advance TAE Agarose Tablets | 75 Tablets (0.65 g Agarose each) |
| AG11 | MIDORI[Green] Advance Agarose Tablets (without buffer) | 100 Tablets (0.5 g Agarose each) |
| AG12 | MIDORI[Green] Xtra Agarose Tablets (without buffer) | 100 Tablets (0.5 g Agarose each) |
| AG13 | MIDORI[Green] Xtra TAE Agarose Tablets | 100 Tablets (0.325 g Agarose each) |

# FastGene™ Agarose

## Molecular grade agarose

The FastGene® Agarose was developed for an accurate separation of DNA fragments, such as PCR products and plasmid DNA, as well as RNA fragments. The very high quality allows all experiments for molecular biology. The purity of the agarose leads to an excellent transparency and a low background. This is especially important to obtain sharp and well defined DNA and/or RNA bands with the highest sensitivity in the low molecular weight range.

- Molecular grade agarose
- Perfect separation of DNA/RNA
- Sharp and well defined DNA bands
- Electroendosmosis (EEO): 0.14-0.16
- Concentrations from 0.75 - 2%

## Agarose tablets - no weighing required

With the FastGene® Agarose Tablets you can create agarose gels without time consuming weighing. Just add one tablet to 50 ml of gel running buffer and heat — the result is a 1% agarose gel. It's that simple. With our Agarose Tablets there's no powder to weigh and no mess to make!

Take these tablets with your favorite running buffer.

## Quality agarose for small products

The detection of small bands is only possible with high quality agarose. Two gels were prepared using the FastGene® Agarose and a low quality agarose from competitor C. The ladder was stained with MIDORI$^{Green}$ Direct and separation of the bands was done using the Mupid™-ONE electrophoresis system (MU2, next page).

Detection of small bands using high quality FastGene® Agarose and Competitor C's Agarose. All seven bands from the ladder are visible when using FastGene® Agarose. When comparing the green box to the red box, Competitor C's Agarose does not show the lowest three bands.

## Choose a suitable agarose concentration

High gel strength allows you to use gel concentrations from 0.75% - 2%. Blotting experiments will run perfectly, and separation efficiency up to 23 kb is guaranteed. Every batch of our agarose is tested with different-sized DNA fragments, and the background fluorescence is measured with ethidium bromide or non-toxic stains to assure the cleanest signals. But don't take our word for it — try them for yourself!

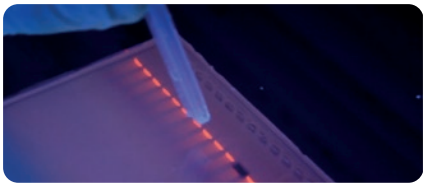
## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| AG01 | FastGene® Agarose | 100 g |
| AG02 | FastGene® Agarose | 500 g |
| AG05-100 | FastGene® Agarose Tablets | 100 Tablets (0.5 g Agarose each) |

# FastGene™ Agarose Gel Band Cutter

## Safe time for cutting DNA bands

This easy-to-use tool will facilitate your daily work. Now you can excise your DNA bands easily without risking contamination or scratching the glass surface of the transilluminator. The FastGene® Agarose Gel Band Cutter is a ready-to-use and disposable tool for cutting agarose gel bands. This affordable tool simplifies fragment purification and eliminates wasted effort using razor blades. The size of the excised gel band will always be 6 mm x 3 mm, and you can collect multiple bands in a single FastGene® Cutter — making large-scale purifications that much easier.



FastGene® Agarose Gel Band Cutter is the best way to excise DNA bands from an agarose gel.

- Easily excise DNA bands
- No razor blades necessary
- Safe time

### Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| FG-830 | FastGene® Agarose Gel Band Cutter | 50 Units |

**Customer Testimonial**

*"We are very happy using the FastGene® Gel Band Cutter and have successfully implemented it in our practical course. In the past, our students had issues cutting out the correct band without adding too much unnecessary agarose when using a scalpel and a tweezer. This is important since during the next step the same amount of extraction buffer has to be added to the agarose material. This problem was solved by using this product. We have tested similar products but they could not convince us."*

**Zeynep Weninger**
Laboratory Biochemistry - Faculty of applied chemistry
Nürnberg Institute of Technology Georg Simon Ohm, Germany

★★★★★

# Stock Solutions

## All you need for a perfect agarose gel electrophoresis

Running and sample buffers as ready solutions. The highly concentrated stock solution is industrially produced and tested and therefore a secure and convenient alternative for selfmade agarose buffers.

### Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| ID1521 | 50X TAE Buffer | 500 ml |
| ID1531 | 10X TBE Buffer | 500 ml |
| ID1654 | 6x Nucleic Acid Loading Buffer | 10 ml |

### TBE Buffer

### TAE Buffer

### 6x DNA Loading Buffer

# Mupid™-ONE Electrophoresis System


## Advanced DNA separation

The Mupid™-One Electrophoresis system is one of the most convenient DNA separation systems on the market. It has many novel features including a separated power supply, a simple buffer drainage system, support for multi-channel pipettes, and seven output voltage settings (18, 25, 35, 50, 70, 100 and 135 V) as well as a timer function for delivering the perfect run every time.

- Smart power supply
- Heat resistant material
- Multichannel pipette compatible
- Memory function
- Gel casting set included

## What makes this system so safe?

For prevention of an electric shock, the system is running only if both parts (chamber and power controller) are connected and if the lid is closed! With an open lid the main power can not be switched on.

## What makes this system so popular?

The Mupid™-One gel trays are heat resistant: By using a novel polymeric material (PPHOX), gel solution up to 100 °C can be poured into the tray without turning milky or brittle. The clean up of the used gel trays can be performed with boiling water.


The Mupid™-One is a CE labeled electrophresis system for agarose gels.

## What makes this system so easy-to-use?

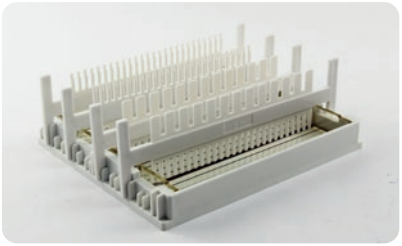
The power controller is easy to use. Seven conventional voltages (18, 25, 35, 50, 70, 100 and 135 V) are available. The peak voltage is constant (140 V) and output level changes through pulse control. A timer with an alarm function is included. All parameters of the last run are memorised and automatically saved. The power controller can be disconnected easily. Therefore, the chamber is safe and easy to clean up.

# Mupid™-ONE Electrophoresis System

## Everything you need for a perfect gel!

The Mupid™-One comes with the Gel casting set standard (Cat.No. ON-MS). This casting set includes 4 combs, which can be used from both sides (13 wells and 26 wells). Furthermore, this set comes with different gel trays: Two gel trays small (S) for the preparation of mini gels and one gel tray large (L) for larger gels. The optional gel casting set GM-HR includes two large combs and two different gel trays: Four gel trays mini and two gel trays small (S).

**All accessories are included**



Gel casting set standard (ON-MS), included with the Mupid™-One.

| SPECIFICATION | | |
|---|---|---|
| Compact design | ✔ | Overall dimensions: 183 mm (B) x 59 mm (H) x 162 mm (L)<br>Bath volume: 270 - 320 ml |
| Integrated power supply | ✔ | Input voltage: AC100 V - 240 V, 50-60 Hz<br>Output voltage: 8 V, 25 V, 35 V, 50 V, 70 V, 100 V and 135 V |
| Memory function | ✔ | Automatic memory function from the last use |
| Safety lid | ✔ | Without the lid, main power can not be operated |
| Multi-channel pipette compatible | ✔ | The included combs are multi-channel pipette compatible |
| Optimal gel tray size | ✔ | Small gel tray: 130 mm (B) x 16.5 mm (H) x 59.5 mm (L)<br>Large gel tray: 130 mm (B) x 24 mm (H) x 122 mm (L) |
| Optimal comb size | ✔ | Number of wells: 13 or 26<br>Spacing size: 9 mm (13 wells), |

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| MU2 | Mupid™-One | Mupid™-One electrophoresis system with 1x gel chamber, 1x power controller, 1x gel casting set, 4x combs, 2x gel trays S, 1x gel tray L |
| MU4 | Mupid™-One LED Illuminator | Mupid™-One LED Illuminator (see next page) |

## Accessories for the Mupid™-One

| Cat. No. | Product | Content |
|---|---|---|
| ON-MS | Gel casting set standard | 1x Mupid™-One gel casting set, 4x combs, 2x gel trays S, 1x gel tray L |
| GM-HR | Gel casting set large | 1x Mupid™-One gel casting set large, 2x large combs, 4x gel trays mini, 2x gel trays L |
| ON-GL | Large gel trays | 2 gel trays L |
| ON-GS | Small gel trays | 4 gel trays S |
| ON-SD | Gel casting stand standard | 1 gel casting stand standard |
| ON-C1 | Gel combs | 2 combs for the Mupid™-One electrophoresis system |

# Mupid™-ONE LED Illuminator

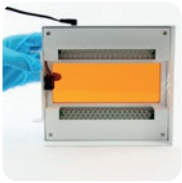

## Watch the DNA run

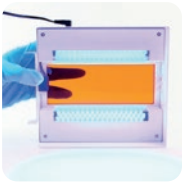
The MUPID™-One LED Illuminator allows the visualization and detection of DNA fragments during the run. The illuminator substitutes the MUPID lid and includes an orange coloured filter to allow you easily check the results without wearing goggles.

## Blue LED light for a safe detection of DNA

The MUPID™-One LED Illuminator produces blue light with an emission peak at 470 nm, effective for the excitation of safe nucleic acid stains such as MIDORI$^{Green}$ Xtra and SYBR® dyes. The separated DNA is not damaged by the LED light, because it contains no short-wave UV-light.

- **Real time electrophoresis**
- **Safe Blue LED light**
- **Add-on for the Mupid™-One electrophoresis chamber**





| SPECIFICATION | | |
|---|---|---|
| Safe Blue LED light | ✓ | Blue LED light for the safe detection of green DNA dyes (wavelength of 470 nm) |
| Compact design | ✓ | Dimensions: 166 mm x 170 mm x 51 mm<br>Viewing area: 150 x 60 mm |
| Compatible | ✓ | MUPID™-One, Mupid™ exU and Mupid™ ACE |

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| MU4 | Mupid™-One LED Illuminator | Mupid™-One LED Illuminator with black gel trays |

# FastGene™ DNA Marker

## For each application the right ladder

The FastGene® DNA ladders were developed for different applications: The MWD50 was designed for the most accurate discrimination of small PCR products, with 50 bp steps up to 1,500 bp. The MWD100 is the perfect ladder for everyday use. The ladder with 12 fragments starts at 100 bp, therefore being suitable even for small qPCR products, and goes up to 3,000 bp so that the sizes of small plasmids and big PCR products can be determined. For very large products and plasmids, NIPPON Genetics EUROPE offers the MWD1P. The ladder starts at 100 bp and goes up to 10,000 bp.

- Molecular weight Marker for each application
- Crystal clear DNA bands
- Sharp and well defined DNA bands
- Loading dye is incorporated

## Stable even at room temperature

The DNA Ladders MWD100 and MWD1P are extremly stable. The stability tests show that the ladders are stable for at least 12 months at 25°C. For long term storage, store at 4°C to -20 °C.

**Best quality/price ratio**

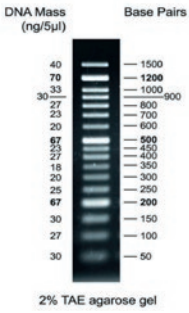
## Dyes for easy tracking

All our ladders have tracking dyes and loading dyes included, so that the movement of the DNA can be tracked and the optimal stopping point can be determined.

## Specification

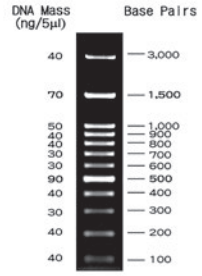
| Cat. No. | MWD50 | MWD100 | MWD1P |
|---|---|---|---|
| Description | 50 bp Ladder | 100 bp Ladder | 1 kb Ladder |
| Range / bp | 50 - 1,500 | 100 - 3,000 | 100 - 10,000 |
| Number of bands | 17 | 12 | 13 |
| Reference bands | 3 (200, 500, 1,200) | 2 (500 & 1,500) | 2 (1,000 & 3,000) |
| Loading dye | Orange G | Orange G & Xylene cyanol FF | Bromphenol blue |
| Content | 56 µg in 500 µl | 50 µg in 500 µl | 50 µg in 500 µl |
| Recommended load | 5 µl | | |

## MWD50



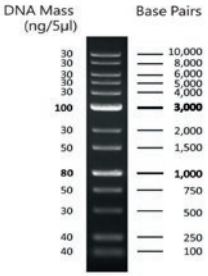

2% TAE agarose gel

## MWD100




1.5 % TAE agarose gel

## MWD1P

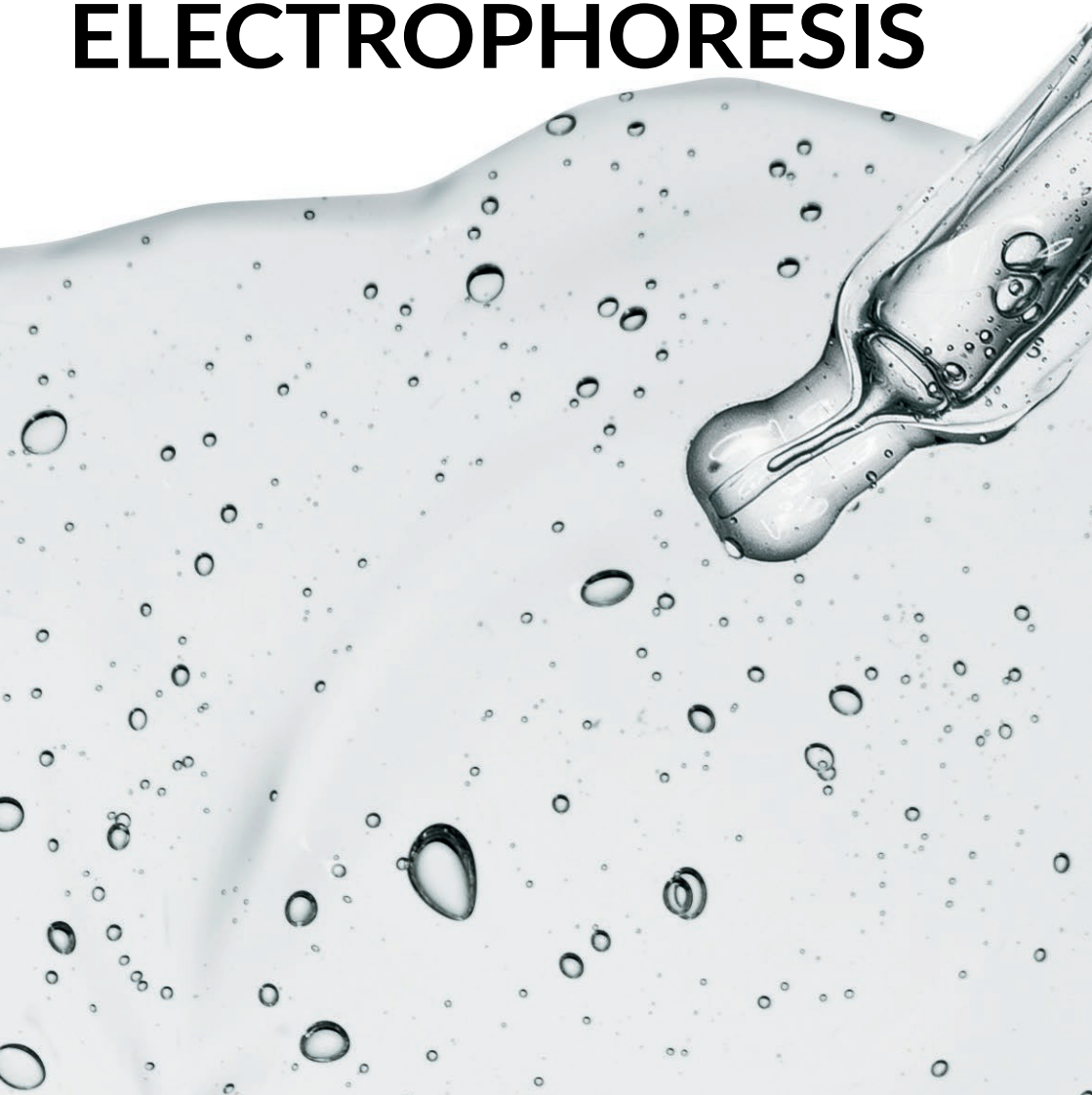



1 % TAE agarose gel

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| MWD50 | FastGene® 50 bp Standard DNA Marker | 500 µl |
| MWD100 | FastGene® 100 bp Standard DNA Marker | 500 µl |
| MWD1P | FastGene® 1 kb Standard DNA Marker Plus | 500 µl |

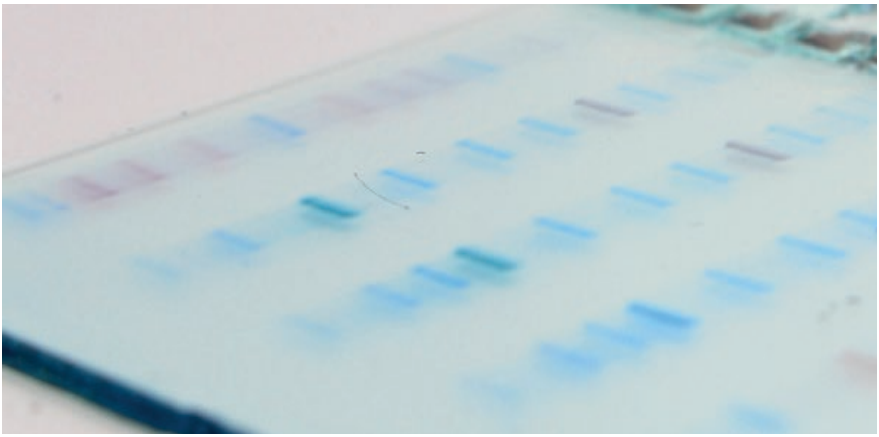
# PROTEIN ELECTROPHORESIS



## CONTENT

# FastGene™ Precast PAGE Gels

*Get the best separation*



- 8 x 10 cm PAGE Gels
- Homogenous and gradient gels
- No special buffers required
- Superior protein band resolution and stability
- Long shelf live

Each box of our FastGene® Precast Protein Gels comes with 10 gels, a cassette opener and spacers. You also need buffer? No problem, just order our MOPS buffer packs.

**Load up to 60 µl sample on each lane**

## Get the best separation

Pouring gels for protein separation is time consuming and prone to error. FastGene® Precast Protein Gels are the perfect replacement, facilitating lab work immensely. Due to the proprietary gel casting method, which is more uniform than any self-cast gel, the FastGene® Precast Protein Gels have the advantage of being more consistent, having therefore a much higher reproducibility.

## Homogenous or gradient PAGE gels

FastGene® Precast Protein Gels are available in a variety of homogenous and gradient gels. They are formulated for denaturing as well as native gel electrophoresis – depending only on the used running buffer. Our gels are compatible with MOPS or MES buffer.

## Superior running performance

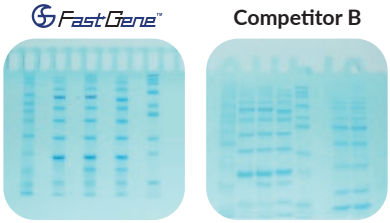
FastGene® Precast Protein Gels are casted in a neutral pH environment. Hence, the hydrolysis of polyacrylamide is reduced, resulting in an increased gel stability and superior band resolution. Further advantages are optimised running performance, larger loading volume (up to 60 µl) because of the extra tall wells, which also prevents a lane-to-lane overflow, a higher transfer efficiency and a shelf life of 12 months.

# FastGene™ Precast PAGE Gels

*Get the best separation*


## New quality standards

The FastGene® Precast Protein Gels have a revolutionary high-performance. The unique buffer formulation that maintains a low operating pH during the electrophoresis eliminates the "smilies" and poor resolution of self made gels and many competitor Precast gels.




Direct comparison of a FastGene® Precast Protein Gel (12%) with a very common competitor gel manufacturer.

## Free sample

You want to test our Precast Protein Gels? No problem! All gels are available as a sample with all components you need for protein electrophoresis. Also with a MOPS buffer Pack! Just contact us, and get your free sample.

## Compatibility

The gels are compatible with different common protein electrophoresis gel tanks like from Bio-Rad and our FastGene® Electrophoresis Unit.

| Manufacturer | Product |
|---|---|
| All manufacturer using 8 x 10 cm gels | |
| NGE | FastGene® Protein Chamber |
| BioRad | Mini PROTEAN II & 3<br>Mini PROTEAN Tetra System |
| Hoefer | SE 250 Mighty Small II<br>SE260 Mighty Small II Deluxe |

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| PG-S012 | FastGene® PAGE Gel 8 x 10 cm - 12% | 10 gels |
| PG-S412 | FastGene® PAGE Gel 8 x 10 cm - 4-12% | 10 gels |
| PG-S420 | FastGene® PAGE Gel 8 x 10 cm - 4-20% | 10 gels |
| PG-S816 | FastGene® PAGE Gel 8 x 10 cm - 8-16% | 10 gels |
| PG-MOPS10 | FastGene® MOPS Buffer Pouches | 10 Pouches for 1 L each |

# FastGene™ Q-Stain Protein Stain

## Like Coomassie Blue only simpler

The FastGene® Q-Stain is a single-step, modified Coomassie Blue protein gel stain for polyacrylamide gels. This protein staining solution eliminates the need to fix, wash or destain your protein gel. Just run your protein gel, add the FastGene® Q-Stain, and watch your bands appear in several seconds. The FastGene® Q-Stain does not stain the polyacrylamide gel. The result is a crystal-clear background with clearly visible protein bands. Unlike many other stains, the FastGene® Q-Stain is a water-based product, free of Methanol and Acetic acid.

- **Protein staining in 10 minutes**
- **No washing, fixing or destaining**
- **High sensitivity - 10 ng bands detectable**
- **Free of methanol and acetic acid**
- **No oversaturation**

## Ideal for mass spectrometry

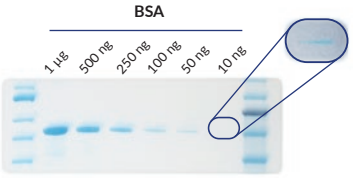
The FastGene® Q-Stain Protein Stain is 100% compatible with mass spectrometry. Just follow the procedure below and analyse your protein:

1. Incubate the excised protein band in 1 ml 30% EtOH or 30% acetone for 30 min at room temperature
2. Repeat step 1 until the stain is removed
3. Continue with a typical mass spectrometry protocol

**Never Wash or Destain again!**


## One-step protein staining in 10 minutes

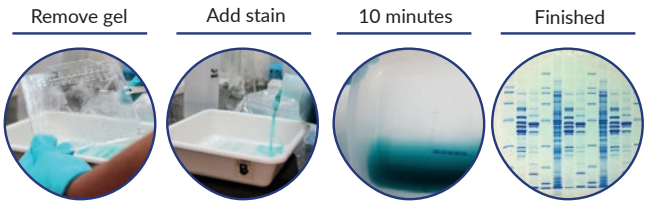
The special formulation of the FastGene® Q-Stain enables a very quick stain procedure of protein gels. The protein bands will be visible in less than 10 minutes. Very low amounts of proteins (down to 10 ng) can be detected by longer staining. It is impossible to over-saturate proteins with the FastGene® Q-Stain, so longer incubation times have no harmful effects. Save time by using Q-Stain for a safe and efficient detection of proteins in polyacrylamide gels.




Detection of 10 ng of protein after 30 minutes incubation. For a better visualization the 10 ng protein band is shown with a stronger contrast.

## Staining a protein gel was never so easy

The entire staining procedure can be completed in about 10 minutes (for typical protein amounts). Just remove the gel after the electrophoresis, add the stain, wait for 10 minutes and watch your protein bands become visible.



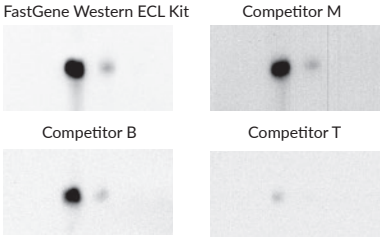

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| FG-QS1 | FastGene® Q-Stain | 1 liter |

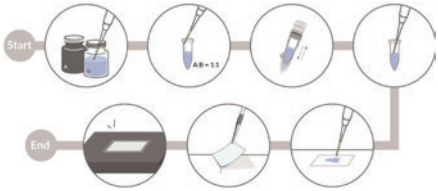
# FastGene™ Western ECL Kit


## Chemiluminescent Western Blot Detection

The FastGene® Western ECL Kit is a luminol-based enhanced chemiluminescent substrate and sensitive with conducting immunoblots with horseradish peroxidase (HRP) – conjugated secondary antibodies. Due to the excellent substrate sensitivity and long signal duration, the FastGene® Western ECL Kit enables the detection of antigens with a very low concentration. Furthermore, its long chemiluminescent signal duration makes both digital and film-based imaging possible without any loss of the signal. Appropriate primary and secondary antibody dilutions are suggested to attain optimal signal intensity and duration.




Comparison between the FastGene® Western ECL Kit with 3 competitor products. All ECL kits were used under the same experimental workflow. An IL-6 fusion protein was detected using a primary antibody against IL-6 from mouse and a secondary anti-mouse peroxide (POD) antibody. 2 seconds exposure for the Western Blot.




Workflow using the FastGene® Western ECL Kit: Mix the luminol solution and peroxide solution in a 1:1 ratio, and thoroughly agitate the chemiluminescent substrate solution well for preparing the 0.1 ml of solution / $cm^2$ of membrane. Place the membrane with the protein side up and remove the membrane from the chemiluminescent substrate solution. Image the membrane with a digital imager.

### Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| FG-CH01 | FastGene® Western ECL Kit | 50 ml each Buffer |

# Running buffer

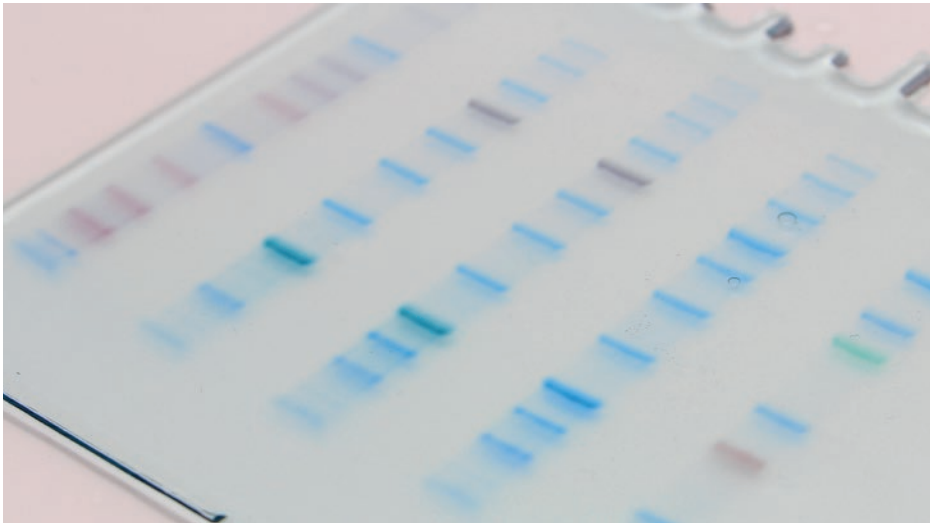
## All you need for a perfect protein electrophoresis

The running buffer is available as a ready solution or as a measured powder in aluminium foil to make 1 liter of buffer. This eliminates the tedious weighing of SDS and other components.

### Ordering information

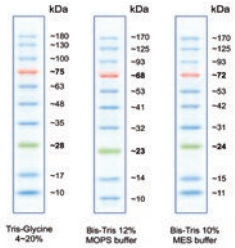
| Cat. No. | Product | Content |
|---|---|---|
| PG-MOPS10 | FastGene® MOPS Buffer Pouches | 10 Pouches for 1 L each |
| ID1501 | Running Buffer Tris-Glycine-SDS | 10x 500 ml |

# FastGene™ Protein Marker



- Huge size range (6.5 - 270 kDa)
- Ready-to-use
- Sharp bands
- Reference bands
- Quality tested

BlueStar
(MWP03)




## One, two or three colours?

You have the freedom of choice: Six different protein Markers with different colours and distinct size ranges. All of our Protein Markers are supplied in a loading buffer for a direct loading on gels. The FastGene® Protein Markers have sharp bands with an excellent accuracy. They are designed for monitoring protein separation during SDS-polyacrylamide gel electrophoresis, verification of Western transfer efficiencies (PVDF, nylon, or nitrocellulose membranes) and for approximating the size of proteins.

**Supplied in a loading buffer for direct loading on gels**

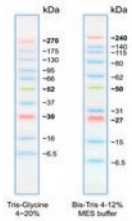
## BlueStar Prestained Protein Ladder

The BlueStar Prestained Protein Ladder is a three colour protein standard with 10 prestained proteins covering a wide range of molecular weights from 10 to 180 kDa.

## BlueEasy Prestained Protein Ladder

The BlueEasy Prestained Protein Ladder (MWP06) is a three colour protein standard with 10 prestained proteins. It has the largest range of molecular weights from 6.5 to 270 kDa. The BlueEasy Prestained Protein Ladder is designed for monitoring protein separation during SDS-polyacrylamide gel electrophoresis, verification of Western transfer efficiency on membranes (PVDF, nylon or nitrocellulose) and for approximating the size of proteins.

BlueEasy
(MWP06)

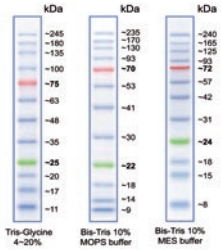



# FastGene™ Protein Marker

## BlueStar PLUS Prestained Protein Ladder

The BlueStar PLUS is a three colour protein standard with 12 prestained proteins covering a wide range of molecular weights from 10 to 245 kDa. The Prestained Protein Ladder is designed for monitoring protein separation during SDS-polyacrylamide gel electrophoresis, verification of Western transfer efficiency on membranes (PVDF, nylon, or nitrocellulose) and for approximate sizing of proteins.

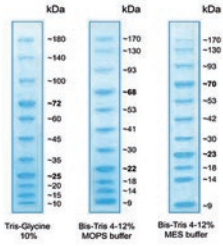
BlueStar PLUS (MWP04)




## JustBlue Prestained Protein Ladder

The JustBlue Protein Marker is a reasonable priced alternative to the BlueStar Marker. Eleven proteins are coupled with a blue chromophor. 3-5 µl per loading for clear visualization during electrophoresis on 10-15 well gels. We recommend 2-3 µl per well for Western transfer. Two reference bands (25 and 72 kDa) are enhanced in intensity when separated on SDS-PAGE. Stable for up to 3 months at 4°C, long term storage at -20 °C.

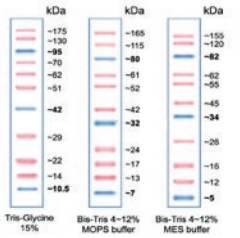
JustBlue (MWP05)




## PiNK Prestained Protein Ladder

The PiNK Prestained Protein Ladder contains 11 proteins that resolve into sharp, tight bands in the range of 5-175 kDa. The PiNK Prestained Protein Ladder allows you to monitor molecular weight separation during electrophoresis, estimate molecular weights of proteins of interest, and evaluate western transfer efficiency.

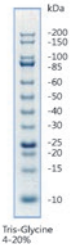
PiNK (MWP02)




## Unstained Protein Ladder

The Unstained Protein Ladder is a mixture of 12 unstained recombinant proteins covering a wide range of molecular weights from 10 to 200 kDa. Please note that this ladder is not stained. The bands will become visible only once you stain your gel with a generic method, such as Coomassie blue or Q-stain.

Unstained (MWP07)




## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| MWP02 | Pink Prestained Protein Marker (500 µl) | Sufficient for 100 mini gels or 50 large gels |
| MWP03 | BlueStar Prestained Protein Marker (500 µl) | Sufficient for 100 mini gels or 50 large gels |
| MWP04 | BlueStar PLUS Prestained Protein Marker (500 µl) | Sufficient for 100 mini gels or 50 large gels |
| MWP05 | JustBlue Prestained Protein Marker (500 µl) | Sufficient for 100 mini gels or 50 large gels |
| MWP06 | BlueEasy Prestained Protein Marker (500 µl) | Sufficient for 100 mini gels or 50 large gels |
| MWP07 | Unstained Protein Marker (500 µl) | Sufficient for 100 mini gels or 50 large gels |

# GEL DOCUMENTATION

## CONTENT

# The Blue/Green LED Technology

## The Danger of UV-Light

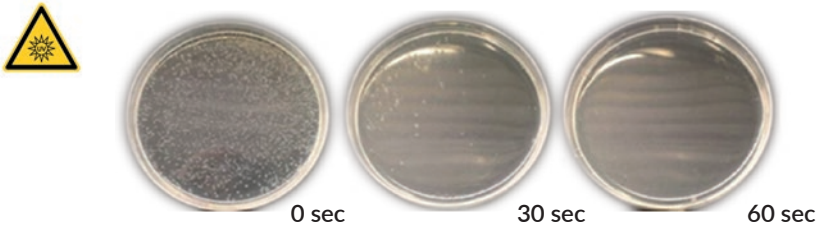
Detection of nucleic acids is mainly performed using light in the UV-range. The problem is that DNA absorbs light in the UV-spectrum. The consequences are formation of DNA modifications, leading to the degradation of DNA. UV-light highly damages DNA and is also dangerous for the user.

## Blue/Green LED - The Revolution

Instead of using a single wavelength, the Blue/Green LED technology uses a combination of wavelengths in a spectrum of light from 470 nm to 520 nm. This Blue/Green light is able to excite all common **red and green DNA dyes** with a very high intensity. The very high intensity can be achieved by the accumulated energy absorption of the dyes.

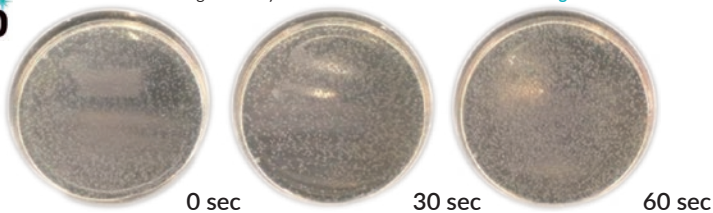
## Comparing the influence of UV-light to Blue/Green LED light on the cloning efficiency

Cloning efficiency of DNA treated with **UV-light**



0 sec 30 sec 60 sec

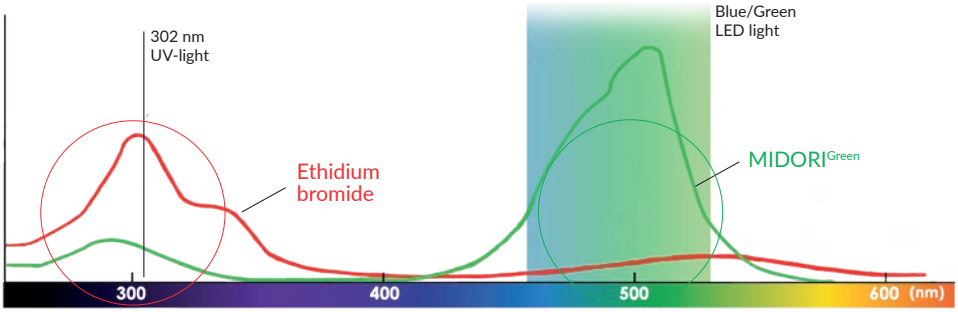
Cloning efficiency of DNA treated with **Blue/Green LED Light**

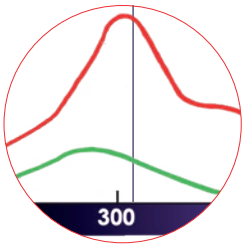


0 sec 30 sec 60 sec

# The Revolution

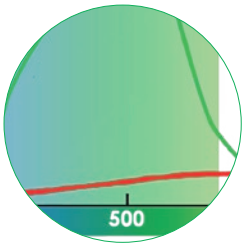
BLUE GREEN BGLED




## UV-Light: Good detection, insecure signal

UV-light uses just a single wavelength for the visualization of DNA. Red and green DNA dyes, like ethidium bromide or the MIDORI Green dyes have usually a good emission in the UV-light spectra. The results are DNA bands with a sufficient intensity. However, UV-light is dangerous for the user and for the DNA. Just 30 sec of UV-light exposure significantly reduces the cloning efficiency and has consequences for other downstream applications. For this reason, the visualization of DNA using UV-light is not the state-of-the-art-method anymore.




## Blue/Green: Safe detection of all Red and Green DNA dyes

In contrast to UV-light, Blue/Green LED technology uses a spectrum over the whole range from 470 nm to 520 nm. This light is not harmful for the DNA and for the user. Even ethidium bromide or other red DNA dyes with a low emission in this area show DNA intensity comparable to UV-light. The reason for that is the **accumulated energy absorption of the DNA** in the Blue/Green spectra. Green DNA dyes have a very high intensity in the Blue/Green spectra. The consequences are DNA bands with a superb intensity.

## Try Blue/Green - Your Benefits:

### *#1: Better cloning efficiency*

### *#2: Less error during sequencing*

### *#3: Healthier working environment*

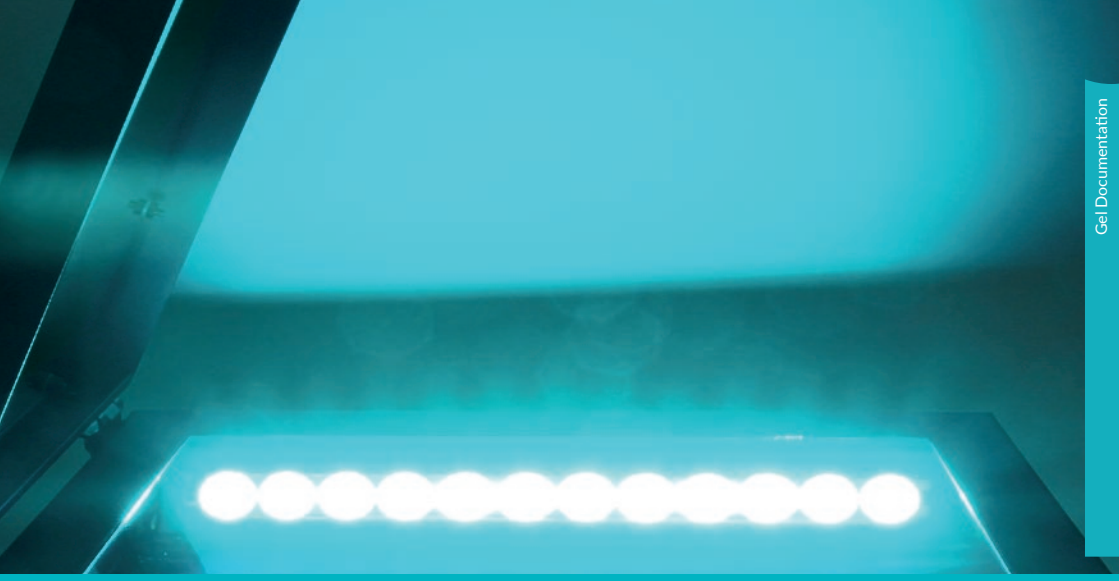
# FastGene™ Gel Documentation Systems

*Find the correct gel doc system for your needs*




| | FAS-Nano *(GP-06LED)* | FAS LED Box *(GP-04LED)* | FAS-Digi PRO *(GP-07LED)* | FAS-V *(GP-FAS-V)* |
|---|---|---|---|---|
| Safe Blue/Green LED light | ● | ● | ● | ● |
| Detection of Green DNA dyes | ● | ● | ● | ● |
| Detection of Red DNA dyes | ● | ● | ● | ● |
| White Light Imaging | ○ | ● | ● | ● |
| High Resolution Camera | ○ | ○ | ● | ● |
| Parfocal Lens | ○ | ○ | ○ | ● |
| Software included | ○ | ● | ● | ● |
| Networkable | ○ | ○ | ● | ● |
| Stand-Alone System | ○ | ● | ◑* | ● |
| Large illuminated Area | ○ | ○ | ● | ● |
| Quantification of DNA and RNA | ○ | ○ | ● | ● |
| CE Certification | ● | ● | ● | ● |

* Operation also possible without Computer



# Talk to the experts and enjoy a product demonstration

Finding the right gel doc system or transilluminator can be difficult. We can help you! Just arrange an appointment with us and enjoy a product demonstration.

+49 2421 554960
info@nippongenetics.de

**www.nippongenetics.eu**

# FastGene™ FAS-Nano

- Gel documentation with safe Blue/Green LED light
- Scientific grade camera
- Image software with comprehensive features for image acquisition
- Fully networkable
- Compatible with all common DNA dyes

## Image gels with your phone

The FastGene® FAS-Nano LED system is the most compact gel illumination system on the market. Ideally suited for tight spaces on a bench-top, the system operates both as an illuminator and, if equipped with a smart phone or tablet, a documentation system that captures an image of your gel.

**The first portable gel imaging system!**

## The perfect personal illuminator

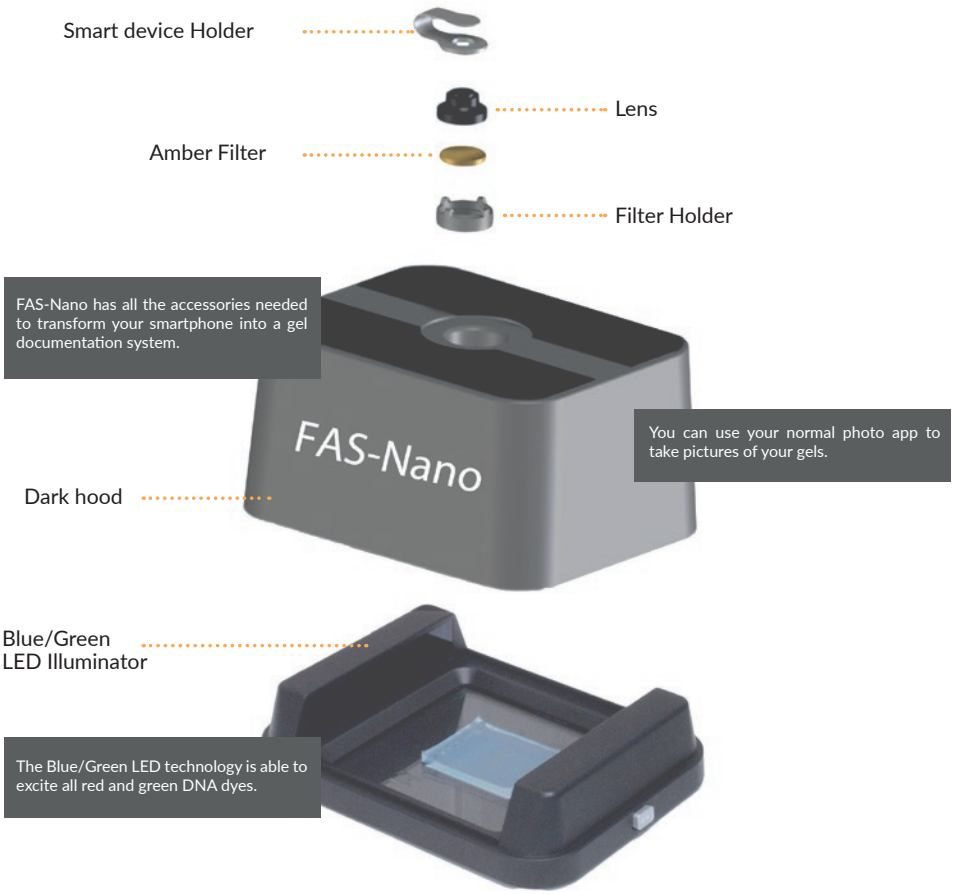
Its very small footprint and light weight make the FastGene® FAS-Nano perfect as a personal illuminator. An array of Blue/Green LEDs situated around the periphery of the glass plate provide excitation light for both red- and green–emitting fluorescence dyes without damaging your DNA.


Combine your smartphone or tablet with the FastGene® FAS-Nano and turn the illuminator to a gel documentation system. The recording of the gel image is as easy as taking a picture.

## Ordering information

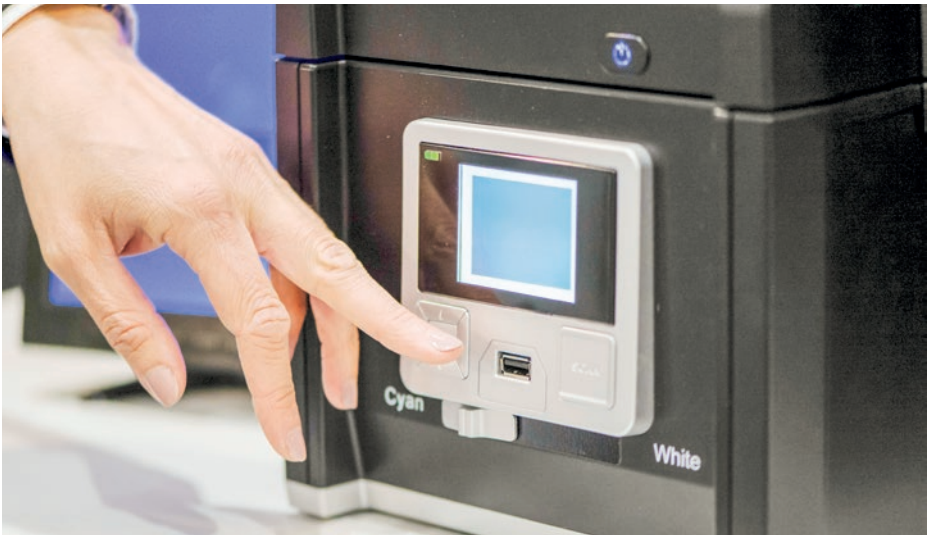
| Cat. No. | Product | Content |
|---|---|---|
| GP-06LED | FastGene® FAS-Nano | Illuminator, amber shield, dark hood, adaptor for mobile camera. |

# FastGene™ FAS-Nano




| SPECIFICATION | | |
|---|---|---|
| Safe Blue/Green LED light | ✓ | Spectrum of light with Blue/Green light from 470 nm to 520 nm<br>No risk of damaging DNA or harming your skin and eyes |
| Smartphone lens | ✓ | Ultrawide angle lens |
| Compact footprint | ✓ | Dimensions: 210 x 168 x 128 mm \| Illuminated area: 100 x 100 mm<br>Weight: 1.2 kg |
| Accessory | ✓ | Ultrawide angle lens |

# FastGene™ FAS LED Box




- Gel documentation with safe Blue/Green LED light
- Very compact footprint
- Detection of red and green DNA dyes
- Documentation of protein gels, membranes and petri dishes
- High resolution camera with 9 MPixel

## The smallest imaging System with Blue/Green LED

The FastGene® FAS LED Box comes with a compact footprint combined with the advantages of the Blue/Green LED technology. This means that even the detection of red DNA dyes, as well as green dyes, is possible.

## One imaging system - even more applications

The FastGene® FAS LED Box is equipped with Blue/Green LED and white LED technology, increasing the high sensitivity without harming your eyes, skin and your DNA. With the white LED array you can image protein gels stained with coomassie or silver staining. The white LED epi-illumination allows the documentation of opaque surfaces such as petri dishes and membranes.

**Customer Testimonial**

*"We use the FAS LED Box already four months as the main device for the detection of DNA bands in agarose gels. The FAS LED Box has a compact design, is easy-to-use and makes images with a high quality. In order to make the USB memory accessible in the network, we use a USB switch that connects the stick to a neighboring PC. We are very satisfied with the Blue/Green LED technology and have replaced our entire UV devices to protect our samples and colleagues."*

**Thorben Detering**
Institute of Food Chemistry,
Leibniz University Hannover, Germany

★★★★★

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| GP-04LED | FastGene® FAS LED Box | LED imaging box with a high resolution CMOS camera (9 MPixel) |

# FastGene™ FAS LED Box


## Get your DNA the easy way

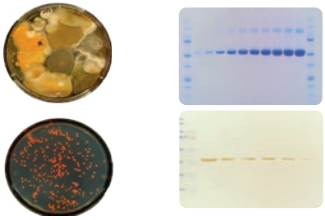
With the FastGene® FAS LED Box and our MIDORI Green dyes it becomes extremely simple to excise your DNA fragments from gels. You don't need to wear protective eyewear or worry about mutagenic dyes – just switch on the Blue/Green LEDs and excise your DNA fragment. You can also obtain perfect signals with red DNA dyes, such as ethidium bromide.

## Easy connection to a monitor or PC

The FastGene® FAS LED Box can be directly connected to an external monitor (via VGA) or to a thermal printer (via USB). By using a USB-switch you are also able to connect the FAS LED Box to a personal computer. Take beautiful pictures and transfer your data easily to a PC. Afterwards, you can share the pictures via network.

Connection of the FAS LED Box to a computer using a USB-switch.

Direct connection of the FAS LED Box to a monitor and to a thermal printer.



Documentation of petri dishes, protein gels and Western Blot images.

| SPECIFICATION | | |
|---|---|---|
| Safe Blue/Green LED light | ✓ | Spectrum of light with Blue/Green light from 470 nm to 520 nm<br>No risk of damaging DNA or harming your skin and eyes |
| Easy image capture | ✓ | CMOS 9 MPixel camera \| Exposure time: - 1.6 sec (in 11 exposure scales)<br>Image types: JPEG, TIFF, BMP \| Image Storage: USB 2.0 |
| 2 White light sources | ✓ | Epi white light for petri dishes and membranes<br>White back light for protein gels |
| Compact footprint | ✓ | Dimensions: 23 x 21 x 23 cm \| Illuminated area: 160 x 115 mm<br>Weight: 3.5 kg |
| Connectable to a monitor or PC | ✓ | Direct connection to an external monitor (via VGA) or to a thermal printer (via USB)<br>Easy connection to a PC using a USB-switch |

# BG BLUE GREEN LED State-of-the-Art Method

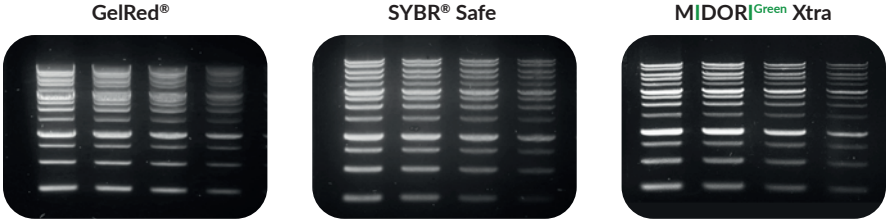


## Blue/Green LED Technology conquers the world

Gel documentation systems with Blue/Green LED technology are already used in more than 1000 laboratories around the world. No damage of DNA, for much better results of downstream applications (ligation, cloning, sequencing). Together with all common DNA dyes, Blue/Green LED light leads to fantastic intensities of DNA/RNA bands in agarose gels. Gel documentation with Blue/Green LED light is therefore the new state-of-the-art method for the visualization of nucleic acids.

*1000+ Instruments around the world with Blue/Green LED light*

# Blue/Green LED Technology


Comparison of the sensitivity between GelRed®, SYBR® Safe and MIDORI Green Xtra using the FAS-Digi PRO. In combination with MIDORI Green Xtra, the FAS-Digi PRO leads to an unbeatable image quality of agarose gels. Each gel was loaded with different amounts of our DNA marker MWD1P (Page 29).

# FastGene™ FAS-Digi PRO


- Gel documentation with safe Blue/Green LED light
- Scientific grade camera
- Image software with comprehensive features for image acquisition
- Fully networkable
- Compatible with all common DNA dyes

## Touch the revolution

The FAS-Digi PRO is our newest imaging system for the detection of DNA and RNA in agarose gels. Equipped with a light-sensitive 24 MPixel camera, the FAS-Digi PRO is controlled completely by an innovative imaging software. With the live view mode, all changes of the camera, the exposure time, the lens' aperture, and a digital zoom are displayed in real-time. The FAS-Digi PRO is a fully networkable gel doc system, which allows a simple transfer of images when connected to a PC.

Check it out on YouTube

## Blue/Green LED light for a safe detection of DNA and RNA

The FAS-Digi PRO is composed of a strong transilluminator equipped with the unique Blue/Green LED technology. These LEDs emit light at a wavelength from 470 nm to 520 nm without damaging nucleic acids. The Blue/Green LED light enables the detection of all common green dyes, such as MIDORI$^{Green}$ or SYBR® Green, yellow dyes e.g. SYBR® Safe and red dyes, e.g. ethidium bromide or GelRed®.

**Still destroying your DNA with UV-light?**
**Try the new Blue/Green LED light!**

The FAS-Digi PRO is composed of a huge transilluminator with an illuminated area of 26 x 21 cm. The dark hood can be easily removed, which allows a very easy excision of DNA bands. Otherwise, just use the amber shield which is magnetically attached to the box.

# FastGene™ FAS-Digi PRO

## Camera for high quality agarose gel

The documentation of agarose gels with the highest quality can be obtained using a 24 MPixel camera with an immense APS-C CMOS sensor. The sensor produces no visible noise from ISO 100 all the way up to ISO 1600. Furthermore, the 24 MPixel allows the detection of lowest light signals in agarose gels. The exposure time of the sensor can be set from 1/4000 sec up to 30 sec. The 3x zoom (focal length of 18 mm to 55 mm) allows a perfect enlargement of the area of interest.

The camera is directly connected to the power supply adapter of the Fas-Digi PRO. Replacing batteries is not necessary.

## Huge and strong transilluminator

The imaging area of the transilluminator has a size of 26 x 21 cm, which allows the imaging of multiple agarose gels of various sizes. Additionally, the FAS-Digi PRO comes with an amber shield, which can be attached with magnets inside the box. Cutting DNA bands is therefore very easy.

Use the additional amber shield to cut out DNA bands

| SPECIFICATION | | |
|---|---|---|
| Scientific grade camera | ✓ | 24 MPixel (Resolution: 6000 x 4000), APS-C sensor, F/4-5.6 aperture, 18-55 mm zoom lens, 0.00025 to 30 seconds exposure time |
| Safe Blue/Green LED light | ✓ | No damage of DNA, no risk of UV exposure for users |
| Imaging software | ✓ | NIPPON Genetics Camera Studio, Windows 10, Saved image format TIFF and JPEG |
| White light source | ✓ | White LED transilluminator: Documentation of protein gels |
| Huge transilluminator | ✓ | View area: 260 x 210 mm |
| Integrated power supply | ✓ | 100-240 V~, 50/60 Hz |
| Compact design | ✓ | Painted aluminium metal<br>52 x 33.5 x 32.5 cm (14 kg) |

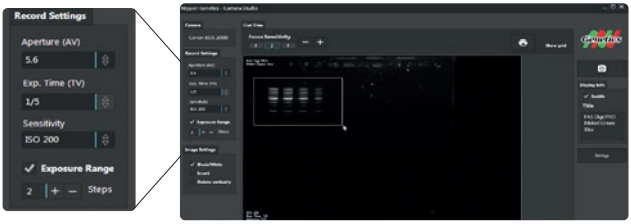
## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| GP-07LED | FastGene® FAS-Digi PRO | LED imaging box, B/G transilluminator, imaging software, high resolution camera, White LED illuminator, Magnetic amber filter shield, Magnetic amber filter for the lens |

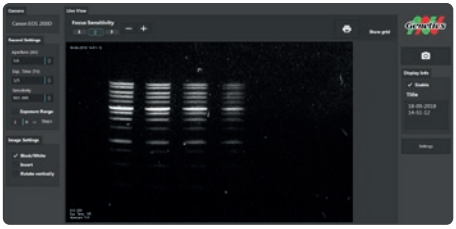
# FastGene™ FAS-Digi PRO - The Software

## Easy-to-use control imaging software

The FastGene® FAS-Digi PRO comes with the intuitive NIPPON Genetics Camera Studio software. With this software you can control all necessary parameters of the camera to analyze and optimize any gel image. These four settings will provide the highest quality images your lab has ever seen for DNA gels: aperture, exposing time, sensitivity and focus. Mouse-driven optimization makes image optimization a click away! Images are saved as TIFF and JPEG format, and can be printed directly by a printer connected to your PC. Need higher quality prints? We offer the Mitsubishi Thermal Printer (P95D) which creates brilliant prints on high-glossy paper.

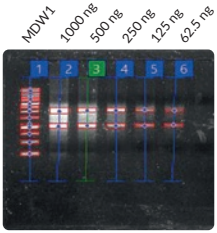


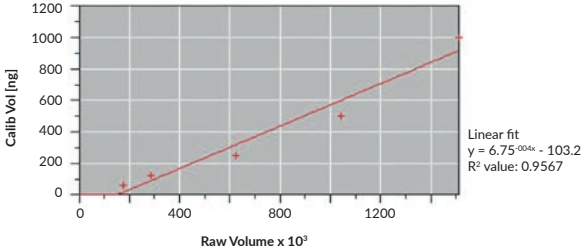

Optimize and analyse your images with the NIPPON Genetics Camera Studio software. In real time you can control all settings of the camera, the aperture, exposure time and sensitivity. Very easy zoom function of an agarose gel, by dragging a frame of the area of interest with the computer mouse.



## Quantification of nucleic acids with the FAS-Digi PRO

For the quantification of DNA or RNA in agarose gels, it is necessary that the light signals received by the camera are proportional to the DNA/RNA concentration. Usually, researchers are using a gel doc system with an integrated CCD camera for the quantification of their DNA/RNA signals. However, modern scientific grade CMOS cameras are so accurate that they can be used for the quantification of nucleic acids, too. The price tag of a CMOS camera is much lower than that of a CCD camera. The FAS-Digi PRO uses very modern CMOS cameras of the highest quality, able to generate pictures, which can be quantified by using the Total LAB 1D software (not part of the NIPPON Genetics Camera Studio software).



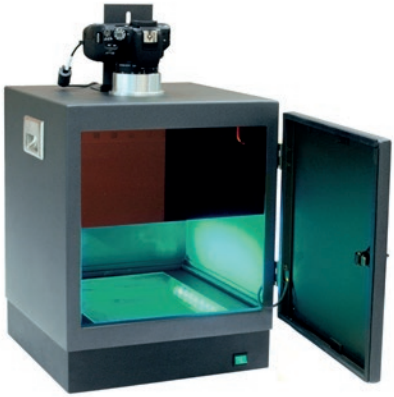




Quantification of RNA with the FAS-Digi PRO using the Total LAB 1D software (Cat. No.: GP-QS1). A 1% agarose gel was stained by using 3 µl of MIDORI$^{Green}$ Xtra in 50 ml of agarose. After setting, the gel was loaded with MWD1P (5 µl), and human total RNA (Agilent Cat No.: 750500) in different concentrations (1000, 500, 250, 125, 62.5 ng). The CMOS sensor of the Canon scientific grade camera which is used in the FAS-Digi PRO is able to generate pictures, which can be quantified by using the Total LAB 1D software. The stain MIDORI$^{Green}$ Xtra shows a low background and crystal clear bands. This stain excels by a linear signal to noise ratio and is therefore suitable for quantification.

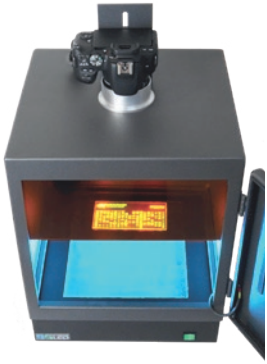
# FastGene™ FAS-Digi PRO - The Accessories

## Amber Filter Shield

The FastGene® FAS-Digi PRO comes with an amber filter shield that can be used to excise DNA bands without having to wear amber filter goggles. The amber filter shield is positioned inside the box and hold in place with magnets. It can be stored in the door if you are not using it.



The amber filter shield enables a quick and easy excision of DNA.



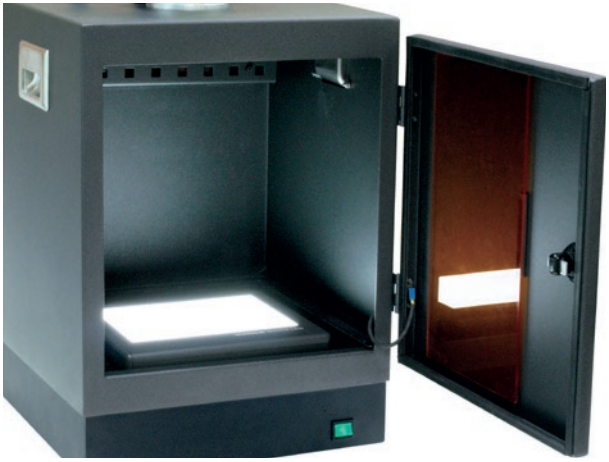
Use the amber shield to cut out DNA bands

## White light LED Illuminator

The documentation of protein gels and Petri dishes is possible by using the white LED illuminator and the FastGene® FAS-Digi PRO. The white light LED illuminator comes with a battery. Hence, the procedure is very simple: (1) Remove the amber filter shield, (2) remove the amber filter in front of the camera lens, which is hold in place with a magnet and (3) place the illuminator in the central area and record your image.

Place the amber filter shield in the door.

Remove the amber filter in front of the lens.



Position the white LED illuminator in the central area and adjust the recording setting in the NIPPON Genetics Camera Studio.

# FastGene™ FAS-V Imaging System


- Safe Blue/Green LED light - No damaging of your DNA
- Stand-alone system
- White LED light for the documentation of protein gels
- Easy-to-use software
- Best image quality

## Stand alone documentation

The FastGene® FAS-V is our most advanced imaging system, working with the innovative Blue/Green LED excitation light technology for the detection of DNA/RNA. This imaging platform combines a powerful CCD camera, brilliant touchscreen display and the superior technology of ultra-bright Blue and Green LEDs. The aquamarine-colour illumination hits the sweet spot for exciting common red and green DNA dyes such as EtBr and MIDORI$^{Green}$. You can always expect at least equivalent results as compared to UV-light transilluminators, but without the risk of damaging DNA or harming your skin and eyes. That's because the lower energy photons from these LEDs will not crosslink DNA (rendering it unable to be replicated) unlike short wave UV-light.

**Customer Testimonial**

*"We decided to purchase the FAS-V gel documentation system with its CCD sensor, because we were very interested in the integrated Blue/Green LED technology. This light protects the skin and eye of the user and is also safe for the examined samples. [...] The FAS-V has no disadvantages compared to conventional UV-based gel documentation systems. Even at low concentration it is possible to visualize DNA bands. Furthermore, with the integrated white light it is possible to document finished Western blots. Working with the FAS V is simpler and faster than with our previous device. Because of the simultaneously recording of 6 images with different exposure values you always get very good images of your gel in a very short time. We are very satisfied with the FAS-V and can recommend the device in good conscience.*

**German Researcher**
Institute of Technical Chemistry,
Leibniz University Hannover, Germany

★★★★★

# FastGene™ FAS-V Imaging System


| SPECIFICATION | | |
|---|---|---|
| Safe Blue/Green LED light | ✓ | Spectrum of light with Blue/Green light from 470 nm to 520 nm<br>No risk of damaging DNA or harming your skin and eyes |
| CCD camera | ✓ | CCD camera (1600 x 1200 - UXGA) \| Exposure time: 0.001 to 30 sec<br>Sensitivity: 0.13 Lux \| Aperture: f/1.2 \| Focal distance: 12.5 - 75 mm \| 6x zoom |
| 2 White light sources | ✓ | White LED room light: Documentation of membranes and petri dishes<br>White LED transilluminator: Documentation of protein gels |
| Huge transilluminator | ✓ | Illuminated area: 260 x 210 mm \| Overall dimensions: 382 mm x 400 mm x 785 mm |
| Networkable computer | ✓ | Integrated computer, which can be directly connected to a network |
| User friendly software | ✓ | Intuitive imaging software for image acquisition<br>Controlled by a 10.4" touchsreen |
| Easy image capture | ✓ | Save images in JPEG, TIFF, PNG or BMP format \| Image storage: 16 GB SSD |
| Integrated power supply | ✓ | 100-240 V~, 50/60 Hz, 2 A |

# FastGene™ FAS-V Imaging System

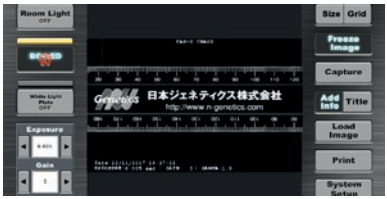
## Very sensitive camera (CCD technology)

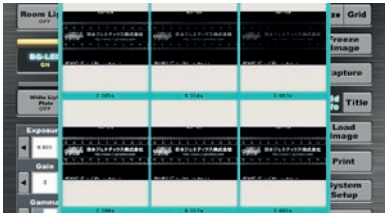
The FastGene® FAS-V has a big CCD-Sensor with a diameter of 1/1.8". The pixel size of 4.4 µm allows the detection of lowest light signals. Images can be recorded in the common TIFF and JPEG as well as in BMP and PNG format. The files can be stored on the 16 GB internal SSD storage or on a USB-stick.

## Very bright parfocal lens - no more focusing

The lens of the FastGene® FAS-V is parfocal, as most microscopic lenses, and prefocused on the imaging area, enabling you to zoom in to the area of interest without readjusting the focus. The huge aperture of f/1.2 enables the maximum transmission of light to the sensor. The aperture can be regulated steplessly until complete closure, making it your decision which aperture delivers the best image.

The 6x zoom, with a focal length from 12.5 mm to 75 mm, allows a perfect enlargement of the area of interest. Setting the lens at 12.5 mm allows the imaging of the complete illuminated area, while zooming into 75 mm will eliminate any unnecessary area.



Easy to control imaging software: Activate or deactivate all three light sources. Or change the image capturing settings. With the multiple exposure mode you can capture 6 images simultaneously with different exposure times.

No more focusing with the parfocal lens.

## Touchscreen operation

The FastGene® FAS-V is easily controlled by a gorgeous, colour 10.4" touchscreen display. All three light sources can be activated and deactivated by the touchscreen. Additionally, the exposure time and gain can be easily adjusted.

The FAS-V system will take up to six pictures simultaneously, using different exposure times. The user can then view and choose which one to use.

A captured image can be edited on site. The image editor starts when an image is loaded from the internal or an external storage. The image can be mirrored horizontally as well as vertically or turned by 90° clockwise or anticlockwise. The contrast of the image can be adjusted and the unimportant parts of the image can be removed using the cropping function.

## White LED transilluminator

The detection of protein bands is performed with the bright white LED transilluminator plate. The white light LED transilluminator has a huge working area of 26 cm x 21 cm, enabling the documentation of very large protein gels or of multiple protein gels at once. The additional white LED room light allows the positioning of gels and to capture images of membranes and petri dishes.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| GP-FAS-V | FastGene® FAS-V | Imaging unit with built-in computer, B/G LED slide table, high resolution CCD camera, 2 MPixel, Lens 12.5 - 75 mm, lens hood, amber filter, software, stylus and manual |

# FastGene™ Imaging System Accessories

## Blue/Green transilluminator for perfect gel imaging

The FastGene® FAS-V has the biggest transilluminator with the Blue/Green LED technology. The imaging area of 26 cm x 21 cm has a superb uniform illumination. This light uniformity is due to two perfectly positioned fields of 12 LED arrays at each side with excitation of 470 nm - 520 nm. This enables the detection of green dyes, such as MIDORI[Green] or SYBR™ Green, yellow dyes, e.g. SYBR™ Safe and red dyes, e.g. ethidium bromide or GelRed™. The special amber filter, optimised for green, yellow and red DNA dyes leads to the strongest signal with the lowest background.


# FastGene™ Imaging System Accessories

### FastGene® Amber Goggles

Glasses for watching agarose gels under Blue and Blue/ Green Light.

### TotalLab Quantification Software

Image analysis tool for the quantification of your DNA, RNA and protein samples.

### P95E Mitsubishi Thermal Printer

- High resolution thermal head with 325dpi
- Print speed of 3.7 seconds
- Compact size - only 154 x 90 x 256 mm
- Fast and easy set up using the front panel
- Panorama format up to 100 x 450 mm
- Extensive adjustments using the print driver

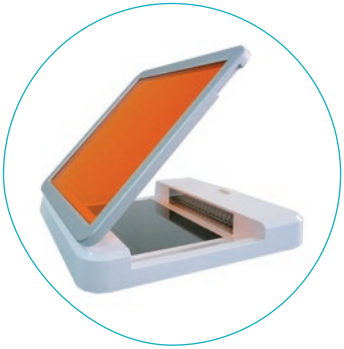
## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| P95E | Mitsubishi Thermoprinter | Thermal Printer for FastGene® GelPic system |
| GPG | Amber Goggle | 1x Amber Goggle |
| GP-QS1 | TotalLab Quantification Software | 1- License of the Quantification Software |

# FastGene™ Traditional Transilluminators

FG-12
FastGene® Blue/White LED Tab

FG-06
FastGene® Blue LED Transilluminator



FG-05
FastGene® Blue LED Illuminator

FG-300
FastGene® UV-light Transilluminator

| Cat. No. | FG-12 | FG-05 | FG-06 | FG-300 |
|---|---|---|---|---|
| Light source | Blue LED (470 nm) White light LED | Blue LED (470 nm) | Blue LED (470 nm) | UV-light (302 nm) |
| Compatible DNA dyes | Green dyes & Proteins | Green dyes | Green dyes | Red and Green dyes |
| Imaging area | 18 cm x 12 cm | 12 cm x 7 cm | 20 cm x 16 cm | 26 cm x 21 cm |
| Dimension | 18.5 x 30 x 22 cm | 21 x 21 x 3 cm | 38 x 40 x 8 cm | 28 x 34 x 8 cm |
| Weight | 2.4 kg | 2.1 kg | 3 kg | 4.3 kg |
| Power | AC adapter 24 V, 1 A | 24 V, 1.67 A | 24 V, 1.67 A | 48 W |
| Filter | Amber filter (~520 nm) | Amber filter (~520 nm) | Amber filter (~520 nm) | UV-blocking shield |

# FastGene™ BG BLUE GREEN LED Transilluminators

**FG-09**
FastGene® Blue/Green LED Transilluminator XL

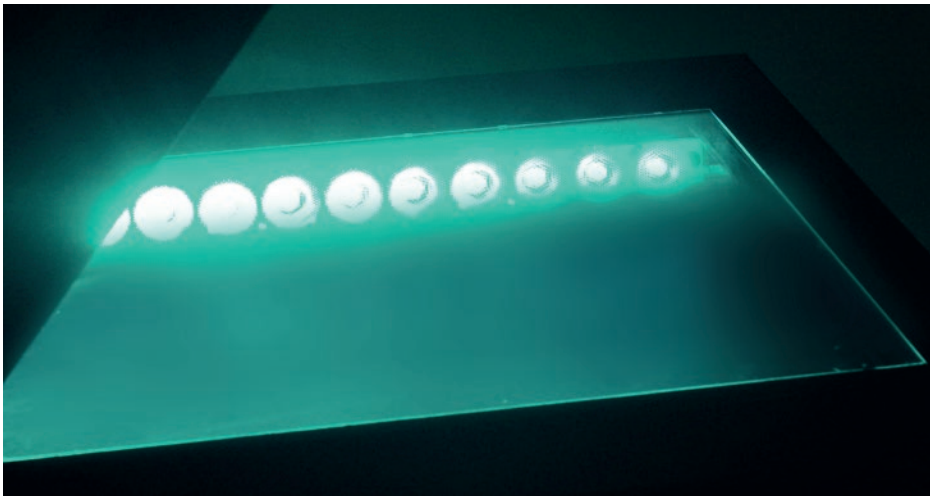
**FG-08**
FastGene® Blue/Green LED Transilluminator


**GP-06LED**
FastGene® FAS-Nano

**FG-11**
FastGene® Blue/Green LED Flashlight

| Cat. No. | FG-09 | FG-08 | GP-06LED | FG-11 |
|---|---|---|---|---|
| Light source | Blue/Green LED | Blue/Green LED | Blue/Green LED | Blue/Green LED |
| Compatible DNA dyes | Green and Red dyes | Green and Red dyes | Green and Red dyes | Green and Red dyes |
| Imaging area | 21 cm x 26 cm | 20 cm x 16 cm | 10 cm x 10 cm | n.a. |
| Dimension | 33.0 x 32.0 x 13.0 cm | 24.0 x 34.0 x 5.0 cm | 21.6 x 16.8 x 12.8 cm | 19 x 3.9 x 2.5 cm |
| Weight | 6.3 kg | 2.9 kg | 1.2 kg | 0.17 kg |
| Power | AC adapter, 2 A | AC adapter, 18 V / 1 A | AC adapter, 12 V / 1,25 A | AC adapter, 18 V / 1 A |
| Filter | Amber filter (~520 nm) | Amber goggles (~520 nm) | Amber shield (~520 nm) | Amber filter (~520 nm) |

# FastGene™ Blue/Green LED Transilluminator XL



## Say goodbye to UV-light

The FastGene® Blue/Green LED Transilluminator XL is the newest Blue/Green LED-based transilluminator for a safe detection of DNA in agarose gels. Blue/Green light emits light at a wavelength from 470 nm to 520 nm, enabling the excitation of all common green and red DNA dyes, such as the MIDORI$^{Green}$ dyes and ethidium bromide.

## Get your DNA the easy way

With the FastGene® Blue/Green LED Transilluminator XL it becomes extremely simple to cut your DNA fragment out of gels. You don't need to wear protective eyewear, or worry about DNA degredation. It is the 21$^{st}$ century way of working with DNA.

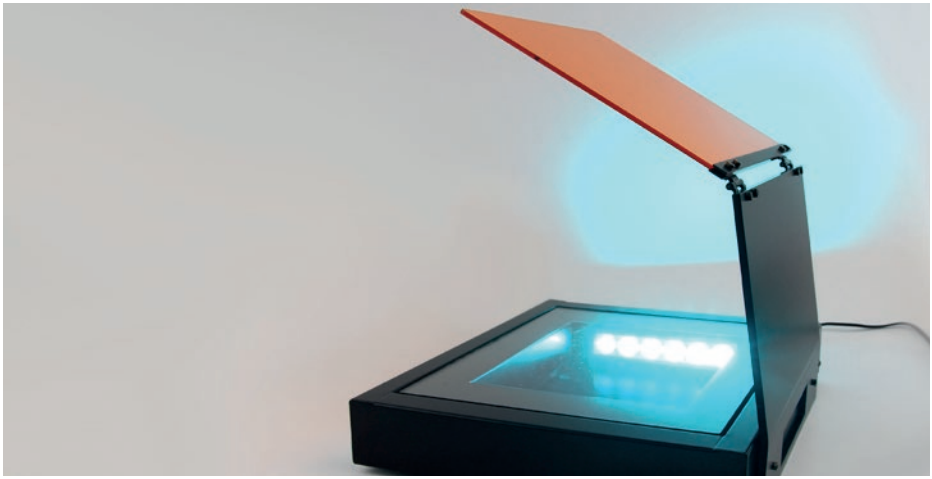
- **Stop destroying your DNA**
- **Huge illuminated area**
- **Excitation of all common green and red DNA dyes**

| SPECIFICATION | | |
|---|---|---|
| Huge illuminated area | ✓ | Size: 330 x 320 x 130 mm \| Illuminated area: 260 x 210 mm<br>Weight: 6.3 kg |
| Safe Blue/Green LED light | ✓ | Spectrum of light with Blue/Green light from 470 nm to 520 nm<br>No risk of damaging DNA or harming your skin and eyes |
| Amber filter included | ✓ | Amber shield for a clear detection of DNA/RNA bands |

## Ordering information

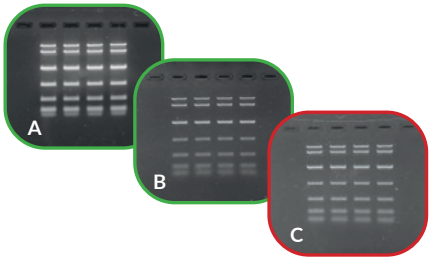
| Cat. No. | Product |
|---|---|
| FG-09 | FastGene® Blue/Green LED Transilluminator XL |

# FastGene™ Blue/Green LED Transilluminator



## Blue/Green LED light for a safe detection

The FastGene® Blue/Green LED Transilluminator was the first transilluminator equipped with our unique LEDs. It has a working area of 20 x 16 cm and is compatible with the FastGene® amber shield (FG-DGOF2). Utilizing the superior technology of ultra-bright blue-green LEDs provides equivalent results to UV transilluminators, but without the risk of damaging DNA in a gel or harming your skin and eyes.




Examples of DNA stained with different dyes and detected with Blue/Green LED technology. (A) the DNA was directly stained with MIDORI$^{Green}$ Direct. The agarose gel containing the DNA was stained in (B) MIDORI$^{Green}$ Advanced or (C) ethidium bromide.

**Customer Testimonial**

*"Sharp and clear observable bands, which are easy to cut out. No damage of the DNA bands by the UV-light and thus also safe for the user. Best detection with MIDORI$^{Green}$.*

**Technical Assistent**
Institute of Experimental and Clinical Pharmacology and Toxicology
University of Freiburg, Germany

★★★★★

## Ordering information

| Cat. No. | Product |
|---|---|
| FG-08 | FastGene® Blue/Green LED Transilluminator (Amber goggle included) |
| FAS-DGOF2 | FastGene® Amber Shield |

# FastGene™ Blue LED (Trans-)Illuminators

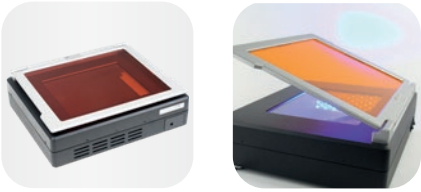
## A better alternative to UV-light

The FastGene® LED Illuminator and the FastGene® LED Transilluminator are using Blue LEDs. These LEDs produce light with a narrow emission peak centered at approximately 470 nm, effective for the visualisation of green nucleic acid stains such as MIDORI[Green] and SYBR® dyes.

## Safe for your DNA and your health

The biggest advantage for the usage of these LED instruments is the fact that the light does not affect skin and eyes and most important the DNA won't be damaged at all. This is especially important if the excised DNA fragment should be used for cloning experiments. All instruments exhibit an orange coloured filter which allows the examination of the separated DNA without any goggles.

**Perfect with MIDORI[Green] Xtra**



The FastGene® Blue LED Transilluminator (Cat. No. FG-06)

The FastGene® LED Illuminator (Cat. No. FG-05).

### Ordering Information

| Cat. No. | Product |
|---|---|
| FG-05 | FastGene® Blue LED Illuminator |
| FG-06 | FastGene® Blue LED Transilluminator |

# FastGene™ UV Transilluminator

## High quality UV-light table

The achievable sensitivity of the detection of DNA, stained with ethidium bromide, is strongly dependent on the quality of the UV lamps and of the filter material. High quality UV tables show almost no visible light. The quality of the UV-light source and of the filter can easily be tested: UV-light is invisible to the human eye. If the position of the UV lamps is easily detectable, then the quality of light bulbs and the filter are inferior. The FastGene® UV Transilluminator passes this test without a problem. Furthermore, the FastGene® UV Transilluminator includes a specifically manufactured filter system and shows a very effective protection against harmful UV radiation.

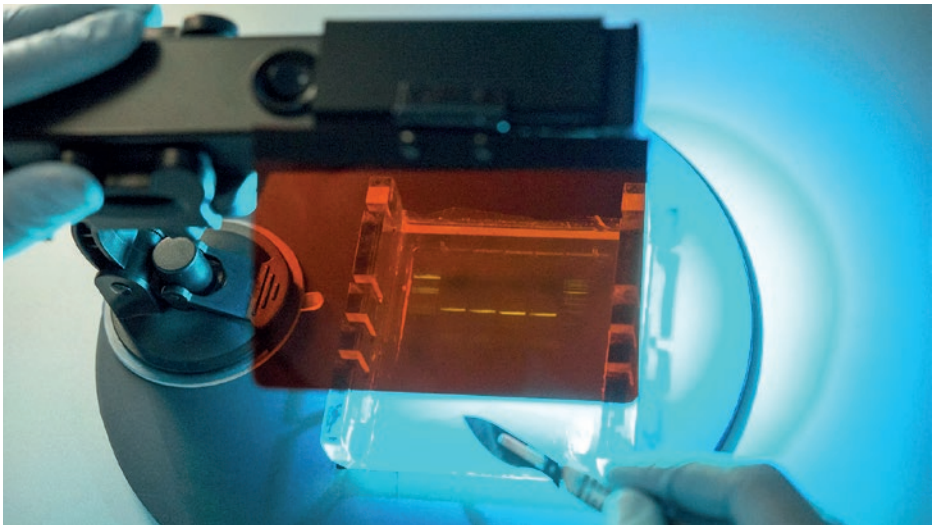
**UV filter with a 0.01% UV transmissibility!**

The FastGene® UV Transilluminator.

### Ordering Information

| Cat. No. | Product |
|---|---|
| FG-300 | FastGene® UV Transilluminator |

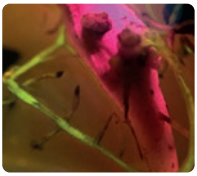
# FastGene™ Blue/Green LED Flashlight

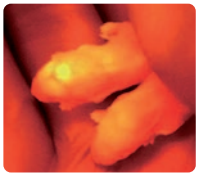


## The “new” indispensable lab tool

Visualise your gel with the new Blue/Green LED flashlight. It is equipped with a Blue/Green LED light source for the safe detection of all red and green DNA dyes. This novel Blue/Green Flashlight has all the benefits you would expect from using LED light such as being harmless to your skin and to your DNA samples, but provides signal intensity previously only seen with research quality, UV transilluminators.

- **Portable transilluminator**
- **Safe Blue/Green LED light**
- **Detection of fluorescent proteins in living organisms**





Detection of fluorescent proteins in plants and animals.

## Stand and cutting board are included

The Blue/Green LED flashlight comes with a stand and cutting board, so that you can easily cut out DNA bands. Furthermore, the flashlight has an attached amber shield so that you can easily view and then snap images with a cell phone! Whether you need to visualize your DNA in a gel or are confirming GFP presence post transfection, this convenient, but powerful, illuminator will become an invaluable tool for the lab!

## See DNA in anything

The Blue/Green LED flashlight was originally designed to visualize DNA in agarose gels. However, the flashlight can also be used to detect fluorescent protein expression (e.g. GFP, YFP) in living plants, animals and bacteria. Furthermore, the relative expression level of fluorescent proteins can also be estimated by the brightness of the fluorescence.

## Ordering Information

| Cat. No. | Product |
|---|---|
| FG-11 | FastGene® Blue/Green LED Flashlight (stand & cutting board are included) |

# FastGene™ Blue/White LED Tab

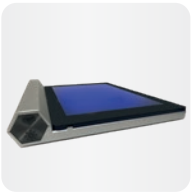

## The "coolest" way to detect DNA

The FastGene® Blue/White LED Tab is a portable easy-to-use transilluminator in a tablet format. The Blue/White LED tab is equipped with Blue LEDs. These Blue LEDs produce light with a narrow emission peak at 470 nm. This wavelength leads to an effective visualization of green nucleic acid stains such as MIDORI$^{Green}$ and SYBR® dyes without destroying your DNA.

## Ideal for protein gels

The FastGene® Blue/White LED Tab also comes with white LEDs. Hence, the documentation of protein gels is also possible. There is even a white plate to diffuse the white light creating a homogeneous illuminated area. The illuminated area has the same size as for the blue LED light.

- No damage of your DNA
- Easy detection of green DNA stains
- Portable and easy handling
- Documentation of protein gels



The FastGene® Blue/White LED Tab comes with a large illuminated area and has a Blue LED and a White LED light source.

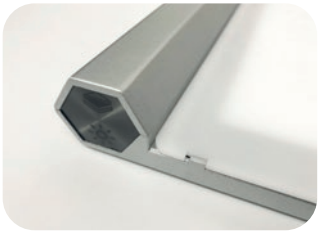
## Ordering information

| Cat. No. | Product |
|---|---|
| FG-12 | FastGene® Blue/White LED Tab |

# FastGene™ Blue/White LED Tab

## Brightness according to your needs

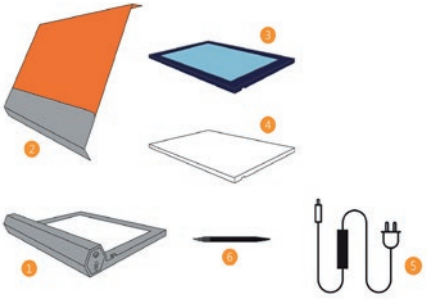
The FastGene® Blue/White LED Tab can change the brightness in the Blue LED mode as well as in the White LED mode. Just press the brightness control button and choose one of the three possible brightness levels.

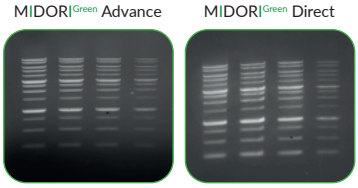


Adjust the brightness to your needs with 3 brightness levels.

## Ideal for MIDORI$^{Green}$ DNA dyes

The FastGene® Blue/White LED Tab is ideal for the detection and documentation of green DNA dyes. Get fantastic DNA signals with the MIDORI$^{Green}$ dyes.






DNA stained with MIDORI$^{Green}$ Advance and MIDORI$^{Green}$ Direct detected with the Blue/White LED tab.

1. Blue/White LED Tab
2. Amber shield
3. Blue uniform plate
4. White uniform plate
5. Power cord
6. Gel cutting knife

NEW

| SPECIFICATION | | |
|---|---|---|
| Tablet format | ✓ | Size: 185 x 220 x 30 mm \| Illuminated area: 180 x 210 mm<br>Weight: 2.4 kg |
| Safe Blue LED light | ✓ | Blue light with a wavelength of 470 nm<br>No risk of damaging DNA or harming your skin and eyes |
| White light source | ✓ | White LEDs for the documentation of protein gels |
| 3 brightness levels | ✓ | Adjust the brightness to your needs with 3 different brightness levels |

# NUCLEIC ACID PURIFICATION

## CONTENT

# FastGene™ RNA Kits

*New level of RNA purity*


- **Fast procedure delivering high-quality RNA in minutes**
- **Consistent RNA yields**
- **Ready-to-use RNA for any downstream application**
- **Basic Kit for an easy and fast purification of even fatty tissue**
- **Premium Kit for ultrapure & concentrated RNA - free of genomic DNA**

## RNA of the highest quality

The FastGene® RNA Kits deliver RNA of the highest grade. The quality of RNA is measured by determining a RIN (RNA integrity number). According to the manufacturer's instructions, a RIN gives an idea of the integrity of the RNA. High quality RNA will give a RIN above 8, 10 being the maximal value. The FastGene® RNA Basic and Premium Kits purify RNA to a grade comparable to market leaders. Therefore, the RNA is in an ideal state for downstream applications, such as reverse transcription.

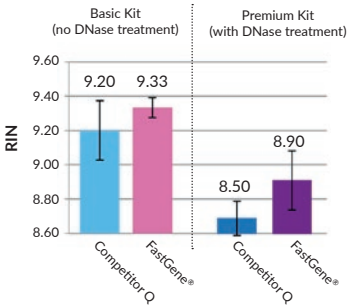
## New level of RNA purity

The FastGene® RNA Premium Kit was developed for rapid, efficient, and clean purification of RNA from tissues and cells for challenging applications such as next-gen sequencing (NGS). The silica membrane based technology does not use phenols.

## Very quick procedure

The FastGene® RNA Basic Kit has a very quick and easy procedure, optimal for a high number of samples. Additionally, a special protocol for large inputs was developed. The buffer necessary for large inputs can be purchased separately without the need of buying a whole kit.

### Quality (RIN Score)




RNA quality determination using an Agilent Bioanalyzer.
The FastGene® RNA Kits deliver high quality RNA repeatedly.

# FastGene™ RNA Kits

*New level of RNA purity*

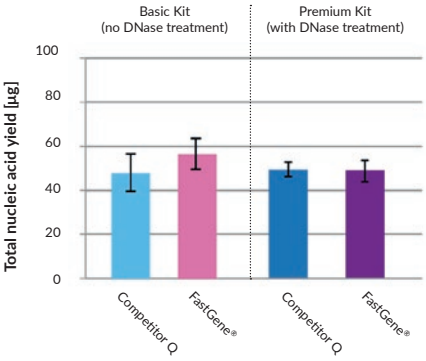
## Large yields

Obtaining a good yield from the RNA purification is essential. The FastGene® RNA Basic and Premium Kits deliver very large total yields, therefore enabling mutliple analyses of a single RNA purification. When compared to the market leaders, the FastGene® RNA Basic kit delivers a higher yield showing the optimised purification procedure.

## Basic or premium?

The FastGene® RNA Kits come in two different versions. The FastGene® RNA Basic Kit is ideal for purification of RNA where small amounts of copurified DNA does not matter. Whereas the FastGene® RNA Premium Kit ensures the complete elimination of genomic DNA.

## Yield




The FastGene® RNA Kits deliver very high yield.

Choose the Basic Kit when small amounts of copurified DNA are not a problem for you.

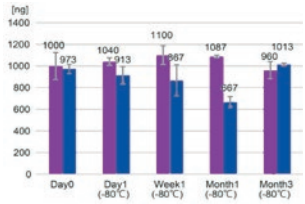
Choose the Premium Kit for an optimal DNA removal for very pure RNA.

## RNA stability of samples stored in RL-lysis buffer (3 months)

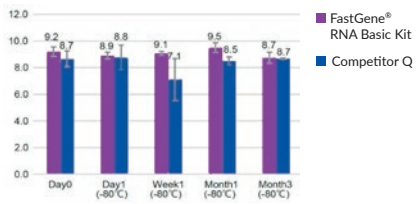
**Background:**
Ideally, the extraction of the RNA and the subsequent analysis should be carried out as quick as possible, since the RNA degrades very quickly. Depending on the timing of an experiment, it can be necessary to store the RNA before extraction.

**Method:**
Here, we investigated the possibility of storing the RNA in the cell lysis buffer RL at -80 °C and compared the yield of RNA and the RIN score to RNA extracted from directly frozen cells.

**1. Yield**




**1. RIN Score**




**Results/Conclusion:**
The RNA yield and RIN score of a freshly prepared RNA isolation did not change when stored at -20 °C or at -80 °C for up to 3 months. Both yield and RIN score showed equivalent or better results than competitor Q´s RNA kit.

# FastGene™ RNA Kits - Sizes

## BASIC

FastGene® RNA Basic (6 Preps)

FastGene® RNA Basic (50 Preps)

FastGene® RNA Basic (250 Preps)

## PREMIUM

FastGene® RNA Premium (6 Preps)

FastGene® RNA Premium (50 Preps)

FastGene® RNA Premium (250 Preps)

**Customer Testimonial**

*"I can highly recommend the FastGene® RNA Kits:*

- *easy protocol*
- *easy procedure without long waiting times*
- *good price-performance ratio"*

More testimonials on our website
www.nippongenetics.eu

**Jennifer Truong**
Physiological Institute,
University of Munich, Germany

★★★★★

### Ordering Information

| Cat. No. | Product | Content |
|---|---|---|
| FG-80006 | FastGene® RNA Basic Kit | 6 Preps |
| FG-80050 | FastGene® RNA Basic Kit | 50 Preps |
| FG-80250 | FastGene® RNA Basic Kit | 250 Preps |
| FG-81006 | FastGene® RNA Premium Kit | 6 Preps |
| FG-81050 | FastGene® RNA Premium Kit | 50 Preps |
| FG-81250 | FastGene® RNA Premium Kit | 250 Preps |
| FG-80L025 | FastGene® RNA Lysis Buffer | 25 ml |
| FG-80L125 | FastGene® RNA Lysis Buffer | 125 ml |

# FastGene™ RNA Kits - Procedure

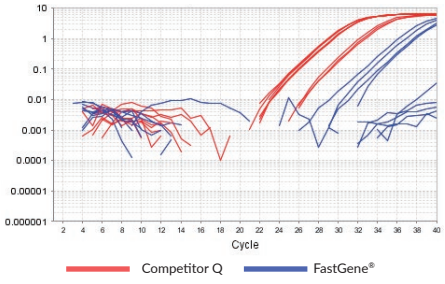
| Step | FastGene® RNA Basic | | FastGene® RNA Premium | |
|---|---|---|---|---|
| | Standard protocol | Large input protocol | Standard protocol | Large input protocol |
| Sample quantity | < 5 * $10^6$ cultured cells<br><10 mg animal tissue | < $10^7$ cultured cells<br><20 mg animal tissue | < 5 * $10^6$ cultured cells<br><10 mg animal tissue | < $10^7$ cultured cells<br><20 mg animal tissue |
| Resuspension \| lysis of the cells |  350 µl buffer RL (with final concentration of 20 mM DTT or TCEP) |  600 µl buffer RL (with final concentration of 20 mM DTT or TCEP) |  350 µl buffer RL (with final concentration of 20 mM DTT or TCEP) |  600 µl buffer RL (with final concentration of 20 mM DTT or TCEP) |
| Filtration of cellular debris | | |  Transfer lysate into a FastGene® RNA filter column<br>Centrifuge at ≥ 10,000 x g for 1 min at room temp. | |
| Optimize RNA binding conditions |  350 µl 70% ethanol<br>Mix thoroughly |  600 µl 70% ethanol<br>Mix thoroughly |  350 µl 70% ethanol<br>Mix thoroughly |  600 µl 70% ethanol<br>Mix thoroughly |
| RNA binding |  Load mix onto FastGene® RNA binding column<br>Centrifuge at ≥ 10,000 x g<br>1 min | |  Load mix onto FastGene® RNA binding column<br>Centrifuge at ≥ 10,000 x g<br>1 min | |
| Protein elimination |  Add 600 µl of buffer RW1<br>Centrifuge at ≥ 10,000 x g<br>30 s | |  Add 600 µl of buffer RW1<br>Centrifuge at ≥ 10,000 x g<br>30 s | |
| Desalination |  Add 700 µl of buffer RW2<br>Centrifuge at ≥ 10,000 x g<br>30 s | |  Add 700 µl of buffer RW2<br>Centrifuge at ≥ 10,000 x g<br>30 s | |
| Removal of RW2 |  Centrifuge at full speed 1 min<br>Transfer spin column to new 1.5 ml collection tube | |  Centrifuge at full speed 1 min<br>Transfer spin column to new 1.5 ml collection tube | |
| Elution of RNA |  Add 50 µl of buffer RE to membrane center<br>Centrifuge at ≥ 10,000 x g<br>1 min | |  Add 50 µl of buffer RE to membrane center<br>Centrifuge at ≥ 10,000 x g 1 min | |
| Optimize DNase I conditions | | |  Add 5 µl 10 x DNase I reaction buffer to the eluate | |
| DNA Digestion | | |  Add 1 µl of DNase I to the mixture<br>Incubate for 10 min | |
| RNA rebinding optimization | | |  Add 250 µl of buffer RBD to the mixture<br>Mix thoroughly by pipetting | |
| RNA binding | | |  Transfer the mix into FastGene® RNA mini-elute column Centrifuge at ≥ 10,000 x g<br>1 min | |
| Desalination \| Elimination of digested DNA | | |  Add 700 µl buffer RW2<br>Centrifuge at ≥ 10,000 x g 30 s<br>Transfer spin column in new 2 ml collection tube | |
| Removal of RW2 | | |  Centrifuge at full speed 1 min<br>Transfer spin column in new 1.5 ml collection tube | |
| Elution of RNA | | |  Add 10-50 µl of buffer RE to the membrane center Centrifuge at ≥ 10,000 x g 1 min | |

# FastGene™ RNA Premium Kit

## No more DNA contamination

Purification of RNA will always have the possibility of genomic DNA contamination. The FastGene® RNA Premium Kit comes with an enzyme which specifically degrades DNA: DNase I.

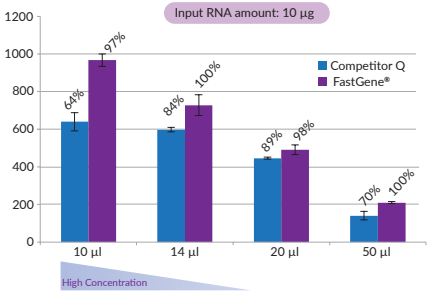
Many RNA purification kits perform the DNA degrading step on the silica membrane. Nonetheless, this step is much more efficient when performed in solution. The FastGene® RNA Premium Kit has a DNA degrading step after the elution of the nucleic acids from the silica membrane.




Detection of genomic DNA contamination using qPCR. RNA isolated using Competitor Q's kit shows considerably earlier Cq values when compared to the FastGene® RNA Premium Kit.

## Mini elute column for the highest concentration and perfect recovery

The FastGene® RNA Premium Kit comes with a mini elute column with a unique design allowing an elution volume as little as 10 µl, creating highly concentrated RNA stocks, essential for low amount of tissue or cellular material. The recovery rate is very high (>95%) even at very low elution volumes. At these volumes, not even the market leader can achieve our yield and recovery rates.



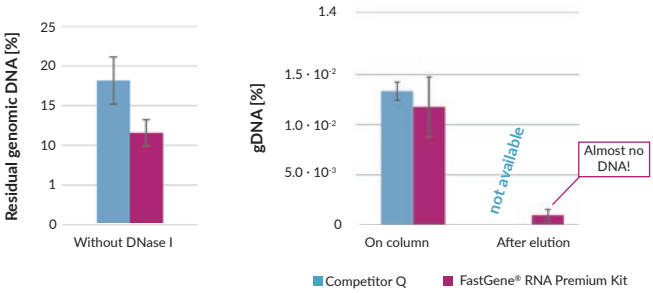

Extremely good recovery rate of the FastGene® RNA Premium Kit compared with a RNA kit from a competitor. The mini elute columns of the FastGene® RNA Premium Kit allow a very low elution volume of 10 µl.

## DNase I treatment after elution vs. on column

**Background:**
Treatment with DNase I is important to remove copurified DNA after RNA purifications. There are two ways for DNase I treatment when working with silica membranes:

1. DNase I treatment after elution: this is the standard protocol of the FastGene® RNA Premium Kit.
2. DNase I treatment on column: standard protocol for most other RNA purification kits.
   (this option is also availabe for the FastGene® RNA Basic Kit)

**Method:**
Here, we investigated the effect of two different DNase I treatment options: 1. After elution and 2. On column




**Results/Conclusion:**
DNase I treatment after elution showed the lowest amount of residual genomic DNA with a higher reproducibility when compared to the other tested conditions.

## Application

# Contamination of DNA in purified RNA; Comparative evaluation of RNA extraction kit, by analyzing the lowest level of contamination

| | |
|---|---|
| Product | FastGene® RNA Premium Kit (FG-81050, FG-81250) |
| Manufacturer | NIPPON Genetics EUROPE |

The following data is kindly provided by Mr. Tetsuro Ariyoshi, RIKEN Center for Biosystems Dynamics Research, Laboratory of Cell Polarity Regulation, Japan. Thank you for your kind publication.

## Background

Quantitative analysis of expression of RNA is carried out, but since we are conducting experiments in which the detection of genomic DNA cannot be avoided in the design of qPCR primer, we should suppress DNA contamination in the purified RNA as much as possible. It is necessary to analyse RNA extraction kits for this applicability. In this case, FastGene® RNA Premium Kit which adopts “DNase I treatment in eluted high-purity RNA solution” and can expect high DNA removal efficiency as a standard protocol, is compared to a commercially available RNA extraction kit with “DNase I treatment on-column” as the standard protocol, and the comparative evaluation was conducted. As an evaluation method, we examined “whether amplification by residual genomic DNA with qPCR is observed” under the reaction condition “without addition of reverse transcripase (without RT enzyme)”.

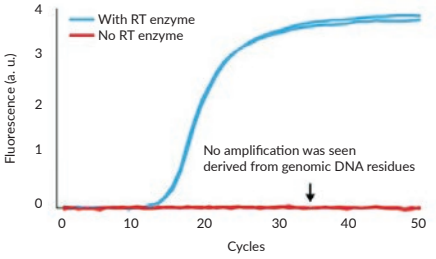
## Method

RNA is analysed using two kinds of RNA extraction kits, “when reverse transcriptase treatment was performed” and “when reverse transcription reaction was not performed”. qPCR was performed respectively, and the amplification curves were compared.

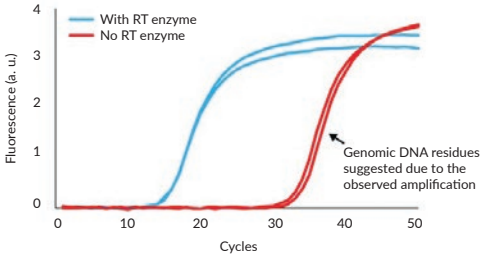
1. Type of initial sample (per Prep): Animal cells (HEK293T 5×10$^5$ cells)
2. Final elution buffer volume during RNA extraction: 30 µl
3. Reverse transcription and qPCR reaction reagents: TaKaRa One Step TB Green PrimeScript PLUS RT-PCR Kit (RR096A)
4. Input amount of RNA: Total RNA 60 ng
5. One Step RT-qPCR reaction with and without RT enzyme

## Results

FastGene® RNA Premium Kit
(DNase I treatment in eluted high purity RNA solution)




Company P RNA extraction kit
(DNase I treatment on-column)




Signals derived from contamination of genomic DNA are hardly detected from purified RNA using FastGene® RNA Premium Kit.

Customers comment

**Mr. Tetsuro Ariyoshi:**

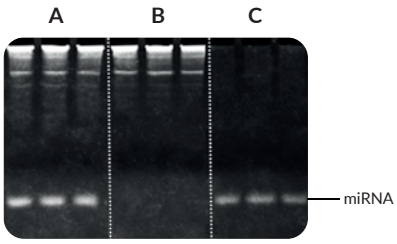
Quantitative analysis of expression of RNA is carried out. However, we are conducting experiments in which the detection of genomic DNA cannot be avoided in the design of qPCR primer. I was looking for an extraction kit in which DNA contamination in purified RNA can be suppressed as much as possible. In purified RNA using FastGene® RNA Premium Kit, almost no signal derived from contamination of DNA was detected, and the amount of expressed RNA could be more accurately quantified compared with purified RNA using competitor`s products. In experiments where it is necessary to minimize DNA contamination as much as possible, such as when primers with junctions cannot be designed, the FastGene® RNA Premium Kit is the product of choice.

# FastGene™ miRNA Enhancer

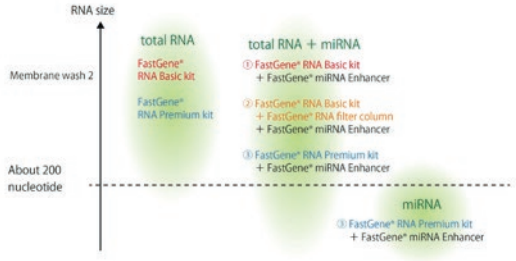

- Simply add to your RNA kit and enrich miRNA molecules
- Suitable with competitors and FastGene RNA extraction kits
- 3x higher amount of pure miRNA compared to competitors
- Easy-to-use, only one additional step in the protocol

## Enrichment of miRNA using a standard RNA purification kit

The FastGene® miRNA Enhancer allows the binding of small RNA to the column of your standard RNA purification protocol. With a single additional step you just have to add the RNA enhancer solution during the purification. Dependent on the kit or protocol you are using, you obtain pure miRNA or total RNA + miRNA. Use the miRNA Enhancer togehter with our FastGene® RNA Premium Kit and you will get pure miRNA. Or use the FastGene® RNA Basic Kits and you will obtain total RNA together with miRNA. The miRNA Enhancer is also compatible with other RNA extraction kit.




(A) Purification of total RNA + miRNA by using the miRNA Enhancer together with the RNA Basic Kit. (B) Purification of RNA by using only the RNA Basic Kit without the miRNA Enhancer. (C). Purification of pure miRNA together with the RNA Premium Kit.




Use the mitRNA Enhancer with FastGene® RNA Basic kit or FastGene® RNA Premium Kit for the recovery of small RNA

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| FG-RNAE-25 | FastGene® miRNA Enhancer Kits (4 times×25) | 100 Preps |

# The importance of miRNA

Micro RNAs are a group comprising about 2,500 molecules known for human so far, which bind with proteins from the Argonaute family (AGO) and function together. The small-sized miRNA-AGO complex binds to particular mRNA sites, and it is always the miRNA component of the complex that determines which region of which mRNA to bind to. The Argonaute protein either blocks protein production from mRNA or eliminates the mRNA by "cleaving" it. Therefore, if a miRNA-AGO complex engages with a certain mRNA, its corresponding protein will no longer be produced. That way genes are effectively silenced by miRNA "capturing" mRNA and affecting gene expression.

# FastGene™ Plasmid Mini Kit

- High yields of plasmid DNA
- Cost effective preparations
- Optimum lysis and maximum DNA yield
- LB-Broth capsules included

## One kit with all components

Each kit comes with ready-to-use LB-Broth capsules. Just add one LB-Broth capsule in 40 ml water, autoclave your solution and start your cloning experiment. Hence, the kit includes everything that is needed for a plasmid preparation.

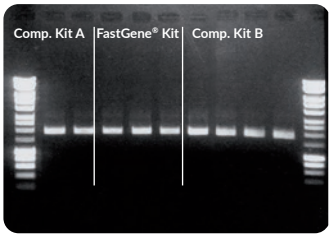
Each Plasmid Mini Kit comes with the helpful LB-Broth capsules.

## High and low-copy plasmid DNA preparation kit

FastGene® Plasmid Mini Kits are designed for rapid small scale isolation and purification of high copy and low copy plasmid DNA. The ready-to-use plasmid DNA is of high quality in low-salt Tris buffer and suitable for typical downstream applications: Cloning, sequencing, PCR, transformation and restriction analysis.

## Fast protocol and high yield

The FastGene® Plasmid Mini Kits are faster than competitors with comparable yield. This allows you to save time and perform downstream application quicker.




pBluescript plasmid DNA was isolated from a 1.4 ml *E. coli* culture according to the recommended procedures of the different kits and eluted in 50 µl elution buffer. 2 µl of each eluate were loaded on a 0.7% TAE agarose gel. FastGene® Plasmid Mini Kits yield an equal amount of plasmid DNA in a faster time compared to other suppliers. The preparation with the FastGene® Plasmid Mini Kit was performed by using the Fast Protocol (right side).

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| FG-90402 | FastGene® Plasmid Mini Kit | 100 preps + 10 LB-Broth capsules |
| FG-90502 | FastGene® Plasmid Mini Kit | 300 preps + 10 LB-Broth capsules |

# FastGene™ Plasmid Mini Kit

| | High copy plasmid | | Low copy plasmid |
|---|---|---|---|
| | Fast protocol | Standard protocol | Low copy protocol |
| Harvest of bacteria | ON culture<br>1 - 3ml<br>>10,000rpm ; 1min<br>Remove the supernatant | ON culture<br>1 - 5ml<br>>10,000rpm ; 2min<br>Remove the supernatant | ON culture<br>5 - 10ml<br>>10,000rpm ; 2min<br>Remove the supernatant |
| Lysis | 200µl of mP1 : Vortexing<br>200µl of mP2 : Invert the tube<br>2min at room temperature<br>300µl of mP3 : Invert the tube | 200µl of mP1 : Vortexing<br>200µl of mP2 : Invert the tube<br>2min at room temperature<br>300µl of mP3 : Invert the tube | 400µl of mP1 : Vortexing<br>400µl of mP2 : Invert the tube<br>2min at room temperature<br>600µl of mP3 : Invert the tube |
| Lysate clarification | 13,000rpm ; 2min | 13,000rpm ; 2min | 13,000rpm ; 3min |
| Sample loading | Load the supernatant<br>13,000rpm ; 30sec | Load the supernatant<br>13,000rpm ; 30sec | Load 750µl of the supernatant<br>13,000rpm ; 30sec ×2 times |
| Membrane washing | 150µl mP4<br>+<br>300µl mP5<br>13,000rpm ; 3min | 400µl of mP4<br>13,000rpm ; 30sec<br>600µl of mP5<br>13,000rpm ; 30sec | 400µl of mP4<br>13,000rpm ; 30sec<br>600µl of mP5<br>13,000rpm ; 30sec |
| Membrane drying | | 13,000rpm ; 2min | 13,000rpm ; 2min |
| Elution | 50µl of mP6<br>2min at room temperature<br>13,000rpm ; 2min | 50µl of mP6<br>2min at room temperature<br>13,000rpm ; 2min | 50µl of preheated (70°C) mP6<br>2min at room temperature<br>13,000rpm ; 2min |

## Specification

| Parameter | High copy plasmid | Low copy plasmid |
|---|---|---|
| *Max. sample volume* | 1-5 ml over-night culture | 5-10 ml over-night culture |
| *Typical yield* | < 25 µg | < 25 µg |
| *Elution volume* | 50 µl | 50 µl |
| *Binding capacity* | 40 µg | 40 µg |
| *Size of vector* | < 15 kb | < 15 kb |
| *Prep time* | 26 min / 12 samples | 36 min / 12 samples |
| *Format* | spin column | spin column |

# FastGene™ Gel/PCR Extraction Kit

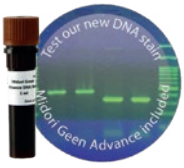
- Very high recovery rate
- Cost effective preparations
- Fast and convenient procedure
- MIDORI[Green] Advance and Gel Band Cutter are included

## Two in one - DNA cleanup from agarose gels and PCR

The FastGene® Gel/PCR Extraction Kit is designed for the extraction of DNA from agarose gels and for the purification of PCR products. DNA fragments purified with FastGene® Gel/PCR Extraction Kits are ready for direct use in all common downstream applications, like sequencing, ligation and transformation, restriction digestion, microarray analysis, PCR and *in vitro* transcription.

## Specification

| Parameter | Gel Extraction | PCR Clean-up |
|---|---|---|
| *Max. sample volume* | 300 mg agarose gel | 100 µl PCR mix |
| *Gel* | < 2,5% TAE or TBE | --- |
| *Typical Recovery* | 70-80% | 80-90% |
| *Binding capacity* | 10 µg | 10 µg |
| *DNA fragment size* | 50 bp – 10 kb | 50 bp – 10 kb |
| *Primer removal* | --- | < 25 bp |
| *Elution volume* | 20-50 µl | 20-50 µl |
| *Prep time* | 20 minutes | 20 minutes |




Each Gel/PCR Extraction Kit contains 5 Agarose Gel Band Cutters and 50 µl MIDORI[Green] Advance. Everything you need to cut out your band!

### Get your free sample

Convince yourself and test the Gel/PCR Extraction Kit for free. Just contact us and get your free sample very soon.

## Ordering information

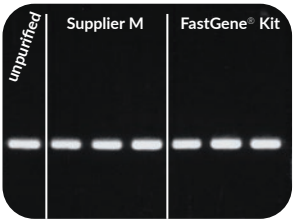
| Cat. No. | Product | Content |
|---|---|---|
| FG-91202 | FastGene® Gel/PCR Extraction Kit | 100 preps + 50 µl MIDORI[Green] Advance + 5 Gel Band Cutter |
| FG-91302 | FastGene® Gel/PCR Extraction Kit | 300 preps + 50 µl MIDORI[Green] Advance + 5 Gel Band Cutter |
| FG-830 | FastGene® Agarose Gel Band Cutter | 50 pieces |

# FastGene™ Gel/PCR Extraction Kit

| | DNA extraction from gel | Purification of PCR products |
|---|---|---|
| Sample preparation | up to 300mg of gel<br>500µl of GP1<br>Vortexing<br>55°C ; 10 - 15min<br>Invert the tube | PCR products : Buffer GP1<br>= 1 : 5<br>(e.g. 40µl : 200µl)<br>Vortexing |
| Sample loading | Load the sample onto the column<br>13,000rpm ; 30sec | Load the sample onto the column<br>13,000rpm ; 30sec |
| Membrane washing | 600µl of GP2<br>13,000rpm ; 30sec *<br>* For TBE gels this wash step should be repeated. | 600µl of GP2<br>13,000rpm ; 30sec |
| Membrane drying | 13,000rpm ; 2min | 13,000rpm ; 2min |
| Elution | 20 - 50µl of GP3<br>2min at room temperature<br>13,000rpm ; 2min | 20 - 50µl of GP3<br>2min at room temperature<br>13,000rpm ; 2min |

## Easy workflow

The FastGene® Gel/PCR Extraction Kit provides spin columns, buffers, and collection tubes for silica-membrane-based purification of DNA fragments from agarose gels and PCR products. With a simple and fast bind-wash-elute procedure you can purify DNA ranging from 15 bp to 10 kb with an elution volume of 20-50 µl.




PCR fragments of 300 bp were purified from 40 µl of a PCR stock solution using FastGene® Gel/ PCR Extraction Kit and a competitor kit, according to manufacturers protocol. 5 µl of eluted DNA were analyzed on a 1.5% TAE agarose gel. The figure demonstrates that the FastGene® Gel/PCR Extraction Kit shows up to 90% of DNA recovery.

## Extraction of large DNA fragments with the FastGene® Gel/PCR Extraction Kit

**Background:**
It is a well-known problem that the recovery of DNA fragments larger than 1 kb proves to be difficult and leads to the loss of large amounts of DNA. In this AppNote the FastGene® Gel/PCR Extraction Kit was used for the isolation of two DNA bands resulted from a restriction digest.

**Method:**
A 6.9 kb large plasmid was digested with a restriction enzyme. The restriction digest was analysed by agarose gel electrophoresis at 100 V for 20 min. The 0.7% agarose gel was produced using 1x TAE buffer (Fig 1.). The target fragments were excised out of the gel and transferred in a 1.5 ml tube. The fragments were purified with the FastGene® Gel/PCR Extraction Kit. 100 ng of each purified DNA fragment were electrophoresed again at 100 V for 20 min (Fig. 2).

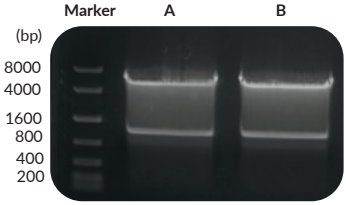



**Fig. 1:** Identification of two restriction sites (5.4 kb and 1.5 kb) of the plasmid after restriction.

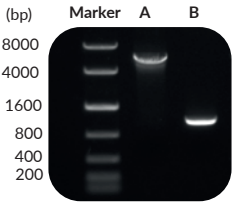



**Fig. 2:** Clear identification of the two DNA fragments after extraction with the FastGene® Gel/PCR Extraction Kit.

**Results/Conclusion:**
Both fragments show a good recovery rate after extraction. The customer also highlighted the fast preparation, easy handling, high recovery rate for large fragments and the unproblematic performance of downstream applications.

# FastGene™ Dye Terminator Removal Kit

- **Remove dyes from sequencing products**
- **Avoid sequencing blobs**
- **Easy protocol**

| | | |
|---|---|---|
| Resin preparation |  | 8.0 ml Buffer DT<br>Vortexing<br>>30 min at room temperature |
| Column preparation |  | Apply 750 µl hydrated resin into the column<br>750 x g ; 3 min |
| |  | Transfer the column into new tube |
| Loading sample |  | Up to 20 µl of sample solution |
| Sample purification |  | 750 x g ; 3 min |

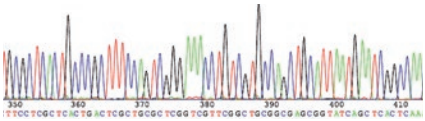
Workflow of the FastGene® Dye Terminator Removal Kit.

## Optimized sequencing results

The FastGene® Dye Terminator Removal Kit removes dye terminator molecules from sequencing samples using an efficient and reasonably priced gel filtration. The kit includes a bottle of gel filtration matrix, resuspension buffer and filter spin columns. At first, an aliquot of the matrix will be mixed with resuspension buffer. Thereafter, the equilibrated matrix is transferred into filter spin columns. After a brief spin up to 20 µl the sequencing reaction can be loaded onto the column. The last centrifugation step will elute the purified sample. All components can be stored at room temperature.

## Specification

| Parameter | Dye Terminator Removal |
|---|---|
| *Max. sample volume* | 20 µl sequencing reaction |
| *Recovery* | > 90% |
| *Prep time* | 5 minutes |
| *Storage* | room temperature,<br>12 months |



The DNA purified by the FastGene® Dye Terminator Removal Kit shows a very good performance in sequencing experiments, no dye blobs occured.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| FG-9411 | FastGene® Dye Terminator Removal Kit | 50 preps |

# Free Sample?

You want to test our RNA or DNA kits? No problem! Just give us a call or write us an email and get your free sample very soon.

+49 2421 554960
info@nippongenetics.de
**www.nippongenetics.eu**

# FastGene™ Magna Stands

- **Neodymium magnets for the best separation**
- **Very quick separation of magnetic beads from the solution**
- **Stable pellet even when resuspending**
- **Complete collection of the magnetic beads for less material loss**

## Adjustable side position magnets

By securing a pellet (with neodymium magnets) on the side of the tube walls rather than at the bottom, the MagnaStands allow complete removal of the supernatant without touching the pellet. Additionally, with the MagnaStand 1.5, the vertical position is adjustable allowing the magnets to be precisely placed on the tube according to volume used in the purification. Leaders in NGS are recommending the MagnaStand for use with their products!

## No more carry-over effects

Magnetic beads have long been used to isolate nucleic acids as well as recombinant proteins. With current designs of magnetic stands, these purifications can be problematic, often with carry-over contaminants when the pellet is disturbed or when the supernatant is not completely removed. The FastGene® MagnaStand solves both issues.

FastGene® MagnaStands are the best tool to easily purify magnetic beads from small volumes, since the magnetic beads are firmly held in one position of the tube wall. This prevents the accidental aspiration of magnetic beads.

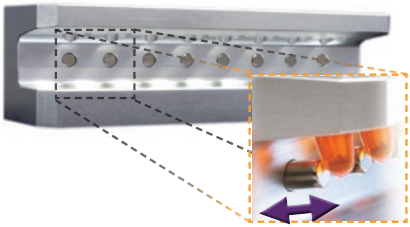
## Ordering information

| Cat. No. | Product | Size |
|---|---|---|
| FG-SSMAG96 | 96-Well FastGene® MagnaStand | 96 Wells |
| FG-SSMAG96LV | 96-Well FastGene® MagnaStand low volume | 96 Wells |
| FG-SSMAG2 | FastGene® 0.2 ml MagnaStand | 8 x 0.2 ml |
| FG-SSMAG1.5 | FastGene® 1.5 ml MagnaStand | 8 x 1.5 ml |

# FastGene™ Magna Stands

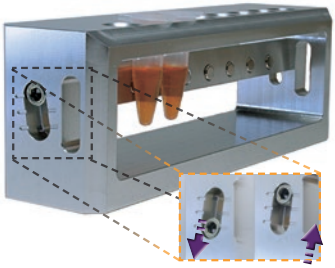
## 96-Well MagnaStand

- Magnetic stand for reliable high-throughput purification
- Optimal positioning of full- and half-skirted 96-well plates
- Purification from very small volumes (5 µl)
- Ultra low elution volume version (3 µl)



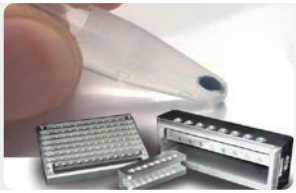
## 0.2 ml MagnaStand

- 8 magnets for 0.2 ml reaction tubes
- Perform up to 8 purifications in parallel
- Purification of DNA from very small volumes (down to 3 µl)
- Each magnet position is adjustable for close contact



## 1.5 ml MagnaStand

- 8 Ultra strong extra large magnets for larger volumes
- e.g. For the purification of recombinant proteins
- Adjust the magnet position to the volume of your sample



## Test the MagnaStands for free!

Each FastGene® MagnaStand uses neodymium magnets, the strongest type of permanent magnet commercially available. Convince yourself and contact us for a free testing.

**Customer Testimonial**

*"NIPPON Genetics EUROPE provided us a 0.2 MagnaStand for testing. I was totally excited and ordered several MagnaStands for the whole lab. I tested several comparison products, but none of them was so convincing as the FastGene® MagnaStand. The beads are kept punctually, and the magnets can be positioned exactly with the supplied allen key. Meanwhile, the magnetic stands are present in the whole institute. Each laboratory table has now a MagnaStand."*

**Carolin Dreier**
Institute of Human Genetics,
University Hospital Münster, Germany

More testimonials on our website
www.nippongenetics.eu

★★★★★

# CLONING

## CONTENT

# FastGene™ Restriction Enzymes

*Cut your DNA the easy way*

- **115 restriction enzymes for all your needs**
- **Fast Cut digestion in just 5-15 minutes**
- **No Star activity**
- **Highest activity and purity**

## What are Restriction Endonucleases?

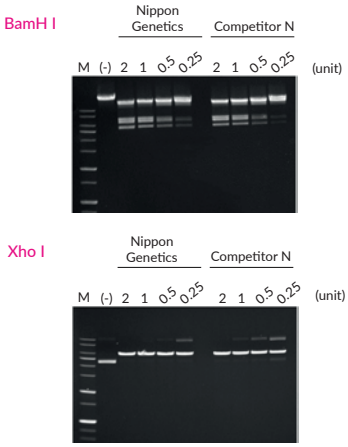
Restriction enzymes recognize short DNA sequences and cleaves double-stranded DNA at or near a specific recognition site. These enzmyes are classified into four types, based on their subunit structure, cofactor requirements and specificity of cleavage.

## Perfect for your cloning experiments

All our restriction enzymes are from type II. These enyzmes cleave DNA within or near the recognition sequence. The restriction enzymes can cleave double stranded DNA either at the center of both strands to yield “blunt ends” or at a staggered position leaving overhangs called “sticky ends”.


## Active as much as the world leader

Our restriction enzymes show the same or even a better activity then the world market leader, competitor N. To this end, we ask you this simple question: Why paying high prices for the same product? All our restriction enzymes have a high activity, purity, no star activity and promise satisfying results. It’s that simple.



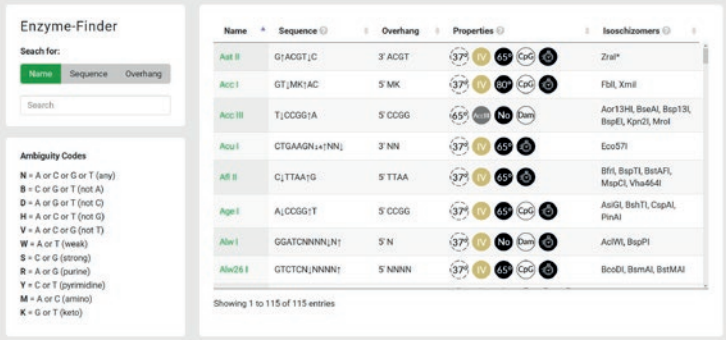

Our restriction enzymes (BamH I and Xho I) show at least the same activity than competitor N. M (Marker), (-) negative control.

# FastGene™ Restriction Enzymes

*Cut your DNA the easy way*

## All restriction enzymes you need - Enzyme Finder

Find your suitable restriction enzyme by using our practical Enzyme-Finder using the name, recognition sequence or overhang. The whole list shows you all important properties of our 115 different restriction enzymes. Also listed are Isochizomers, which have the same cutting site. Here you can find the Enzyme-Finder: www.nippongenetics.eu/en/enzyme-finder/




Scan me

## Digestion in just 5-15 minutes - The FastCut protocol

Most of our restriction enzmyes are supplied with the FastCut buffer which enables a digestion in just 5-15 minutes. Just take 5-10 units of your enzyme per µg DNA, and incubate at recommended temperature for at least 5 minutes.

115 different restriction enzymes for your cloning experiments

## Double digestion the easy way

A vector and an insert DNA can be cloned by cleaving with two different restriction enzymes, thus generating two different restriction ends. This strategy prevents the vector from being ligated without an insert, resulting in great reduction in self-ligation and increase in cloning efficiency. Most of our restriction enzymes are 100% active in the FastCut buffer, making double digestion simple.

1. Double digestion using color-coded buffers:
If possible, use the buffer in which both enzymes have 100% activity. [Example] For performing a double digestion reaction using Not I and Pst I, simply select Buffer III, because both enzymes are 100% active on Buffer III.

Is there no optimal buffer for both enzymes, use a non-optimal Buffer and adjust the number of units or incubation time for the slower rate of cleavage. [Example] For performing a double digestion reaction using Not I and Pvu II, we recommend to select a Buffer II and use double unit of Not I than Pvu II because, Not I exhibits only 50% of activity on Buffer II.

2. Double digestion using the FastCut buffer:
Most restriction enzymes are 100% active in FastCut buffer, making double digestion simple.

3. Setting up a double digestion with a unique buffer
Some restriction endonucleases require unique buffer for maximal activity: For the selection of double digestion buffer if a restriction enzyme requires unique buffer, please refer to the table "activity chart of common restriction enzymes in the five unique buffers".

# FastGene™ Restriction Enzymes

| Enzyme | Cat. # | Sequence 5' → 3' | Enzyme Properties | Activity in FastGene Buffer [%] | | | |
|---|---|---|---|---|---|---|---|
| | | | | I | II | III | IV |
| Aat II | FG-AatII | GACGT↓C | 37 65 T CpG | 0 | 25 | 25 | 100 |
| Acc I | FG-AccI | GT↓MKAC | 37 80 T CpG | 75 | 100 | 100 | 100 |
| Acc III* | FG-AccIII | T↓CCGGA | 65 No dam | 0 | 25 | 100 | 0 |
| Acu I | FG-AcuI | CTGAAGN$_{12}$↓ | 37 65 T | 50 | 50 | 75 | 100 |
| Afl II | FG-AflII | C↓TTAAG | 37 65 T | 75 | 100 | 75 | 100 |
| Age I | FG-AgeI | A↓CCGGT | 37 65 T CpG | 100 | 50 | 0 | 100 |
| Alw I | FG-AlwI | GGATCNNNN↓N | 37 65 T dam | 50 | 50 | 10 | 100 |
| Alw26 I | FG-Alw26I | GTCTCN↓NNNN | 37 65 T CpG | 75 | 100 | 50 | 100 |
| Apa I | FG-ApaI | GGGCC↓C | 37 65 T CpG Dcm | 100 | 25 | 0 | 100 |
| ApaL I | FG-ApaLI | G↓TGCAC | 37 No T CpG | 50 | 100 | 50 | 100 |
| Apo I | FG-ApoI | R↓AATTY | 50 80 III | 10 | 75 | 100 | 75 |
| Asc I | FG-AscI | GG↓CGCGCC | 37 80 T CpG | 0 | 0 | 0 | 100 |
| Ava I | FG-AvaI | C↓YCGRG | 37 80 T CpG | 25 | 100 | 100 | 100 |
| Ava II | FG-AvaII | G↓GWCC | 37 80 T CpG Dcm | 100 | 100 | 50 | 100 |
| Avr II | FG-AvrII | C↓CTAGG | 37 80 T | 100 | 50 | 50 | 100 |
| Bal I* | FG-BalI | TGG↓CCA | 37 65 dam Dcm | 0 | 75 | 25 | 75 |
| BamH I* | FG-BamHI | G↓GATCC | 37 No dam | 75 | 100 | 100 | 100 |
| Bcl I | FG-BclI | T↓GATCA | 50 No III Dam | 50 | 100 | 100 | 75 |
| Bgl I | FG-BglI | GCCNNNN↓NGGC | 37 65 III CpG | 75 | 75 | 100 | 50 |
| Bgl II | FG-BglII | A↓GATCT | 37 65 III | 10 | 75 | 100 | 10 |
| Bsa I | FG-BsaI | GGTCTCN↓NNNN | 37 65 T CpG Dcm | 50 | 100 | 100 | 100 |
| BsaW I | FG-BsaWI | W↓CCGGW | 60 80 T | 50 | 100 | 100 | 100 |
| BsiW I | FG-BsiWI | C↓GTACG | 55 80 III CpG | 50 | 75 | 100 | 50 |
| BsmB I | FG-BsmBI | CGTCTCN↓NNNN | 55 80 III CpG | 10 | 50 | 100 | 25 |
| BsoB I | FG-BsoBI | C↓YCGRG | 37 80 T | 10 | 100 | 100 | 100 |
| BspE I | FG-BspEI | T↓CCGGA | 37 80 III CpG Dam | 10 | 10 | 100 | 10 |
| BsrF I | FG-BsrFI | R↓CCGGY | 37 No T CpG | 75 | 100 | 100 | 100 |
| BstY I | FG-BstYI | R↓GATCY | 60 80 II | 50 | 100 | 75 | 100 |
| BtsC I | FG-BtsCI | GGATGNN↓ | 50 80 T | 75 | 100 | 100 | 100 |
| Cfr10 I* | FG-Cfr10I | R↓CCGGY | 37 No dam CpG | 10 | 10 | 10 | 25 |
| Cfr42 I | FG-Cfr42I | CCGC↓GG | 37 65 I CpG | 100 | 50 | 25 | 75 |
| Cfr9 I | FG-Cfr9I | C↓CCGGG | 37 65 III CpG | 0 | 0 | 100 | 0 |
| Cla I | FG-ClaI | AT↓CGAT | 37 65 T CpG Dcm | 50 | 75 | 75 | 100 |
| CviA I | FG-CviAI | ↓GATC | 37 65 T Dam | 10 | 50 | 10 | 100 |
| Dde I | FG-DdeI | C↓TNAG | 37 65 III CpG | 25 | 50 | 100 | 50 |
| Dpn I | FG-DpnI | GA↓TC | 37 80 T | 75 | 100 | 100 | 100 |
| Dpn II* | FG-DpnII | ↓GATC | 37 65 dam Dam | 25 | 75 | 100 | 75 |
| Dra I | FG-DraI | TTT↓AAA | 37 65 T | 75 | 100 | 50 | 100 |
| Eag I | FG-EagI | C↓GGCCG | 37 65 III CpG | 10 | 25 | 100 | 10 |
| Eco47 I | FG-Eco47I | G↓GWCC | 37 65 III CpG Dcm | 100 | 100 | 100 | 100 |
| EcoN I | FG-EcoNI | CCTNN↓NNNAGG | 37 65 T | 50 | 100 | 75 | 100 |
| EcoO109 I | FG-EcoO109I | RG↓GNCCY | 37 65 T Dcm | 50 | 75 | 100 | 100 |
| EcoR I* | FG-EcoRI | G↓AATTC | 37 65 dam CpG | 50 | 100 | 75 | 100 |
| EcoR V | FG-EcoRV | GAT↓ATC | 37 65 III CpG | 0 | 100 | 100 | 50 |
| EcoT38 I | FG-EcoT38I | GRGCY↓C | 37 65 T | 75 | 100 | 0 | 100 |
| Esp3 I | FG-Esp3I | CGTCTCN↓NNNN | 37 65 T CpG | 25 | 50 | 10 | 100 |
| Fok I | FG-FokI | GGATGN$_{12}$ | 37 65 T CpG Dcm | 100 | 100 | 10 | 100 |
| Fsp I | FG-FspI | TGC↓GCA | 37 65 T CpG | 75 | 100 | 50 | 100 |
| Hae II | FG-HaeII | RGCGC↓Y | 37 80 T CpG | 10 | 100 | 100 | 100 |
| Hae III | FG-HaeIII | GG↓CC | 37 80 T | 50 | 100 | 75 | 100 |
| Hga I | FG-HgaI | GACGCN$_5$↓N$_4$ | 37 65 I CpG | 100 | 75 | 10 | 100 |
| Hinc II | FG-HincII | GTY↓RAC | 37 65 T CpG | 75 | 50 | 50 | 100 |
| Hind II | FG-HindII | GTY↓RAC | 37 65 II CpG | 100 | 100 | 50 | 100 |
| Hind III | FG-HindIII | A↓AGCTT | 37 80 II | 25 | 100 | 75 | 100 |
| Hinf I | FG-HinfI | G↓ANTC | 37 80 T CpG | 50 | 100 | 100 | 100 |
| HinP1 I | FG-HinP1I | G↓CGC | 37 65 II CpG | 50 | 100 | 100 | 75 |
| Hpa I | FG-HpaI | GTT↓AAC | 37 No T CpG | 0 | 50 | 25 | 100 |
| Hpa II | FG-HpaII | C↓CGG | 37 80 T CpG | 100 | 75 | 50 | 100 |
| Hph I | FG-HphI | GGTGAN7↓ | 37 65 T Dam | 100 | 75 | 10 | 100 |
| Hpy188 I | FG-Hpy188I | TCN↓GA | 37 65 T Dam | 50 | 75 | 50 | 100 |
| Hpy99 I | FG-Hpy99I | CGWCG↓ | 37 65 T CpG | 100 | 25 | 10 | 100 |

*Supplied with Unique Buffer

# FastGene™ Restriction Enzymes

| Enzyme | Cat. # | Sequence 5' → 3' | Enzyme Properties | Activity in FastGene Buffer [%] | | | |
|---|---|---|---|---|---|---|---|
| | | | | I | II | III | IV |
| HpyCH4 V | FG-HpyCH4V | TG↓CA | 37° 65° IV | 75 | 100 | 25 | 100 |
| Kpn I | FG-KpnI | GGTAC↓C | 37° No I | 100 | 50 | 0 | 100 |
| Kpn2 I | FG-Kpn2I | T↓CCGGA | 55° 80° I CpG | 100 | 25 | 75 | 50 |
| Lsp1109 I | FG-Lsp1109I | GCAGCN7↓N3 | 37° 65° III | 25 | 75 | 100 | 100 |
| Mbo I | FG-MboI | ↓GATC | 37° 65° III CpG Dam | 75 | 100 | 100 | 100 |
| Mbo II | FG-MboII | GAAGAN7↓ | 37° 65° II Dam | 100 | 100 | 50 | 100 |
| Mlu I | FG-MluI | A↓CGCGT | 37° 65° III CpG | 25 | 75 | 100 | 50 |
| Mnl I | FG-MnlI | CCTCN6↓ | 37° 65° II | 75 | 100 | 75 | 100 |
| Mse I | FG-MseI | T↓TAA | 37° 65° IV | 75 | 100 | 100 | 100 |
| Msp I | FG-MspI | C↓CGG | 37° No IV | 75 | 100 | 75 | 100 |
| MspA1 I | FG-MspA1I | CMG↓CKG | 37° 65° IV CpG | 0 | 100 | 75 | 100 |
| Mun I | FG-MunI | C↓AATTG | 37° 65° II | 100 | 100 | 10 | 100 |
| Nae I | FG-NaeI | GCC↓GGC | 37° 65° I CpG | 100 | 100 | 25 | 100 |
| Nco I | FG-NcoI | C↓CATGG | 37° 65° III | 50 | 100 | 100 | 75 |
| Nde I | FG-NdeI | CA↓TATG | 37° 65° IV | 75 | 100 | 100 | 100 |
| NgoM IV | FG-NgoMIV | G↓CCGGC | 37° 80° IV CpG | 25 | 75 | 0 | 100 |
| Nhe I | FG-NheI | G↓CTAGC | 37° 65° II CpG | 100 | 100 | 10 | 100 |
| Nla IV | FG-NlaIV | GGN↓NCC | 37° 65° IV CpG Dcm | 0 | 10 | 10 | 100 |
| Not I | FG-NotI | GC↓GGCCGC | 37° 65° III CpG | 0 | 50 | 100 | 0 |
| Nru I | FG-NruI | TCG↓CGA | 37° 65° III CpG Dam | 0 | 50 | 100 | 75 |
| Nt.BstNB I | FG-NtBstNBI | GAGTCNNNN↓ | 55° 80° III | 0 | 10 | 100 | 0 |
| PaeR7 I | FG-PaeR7I | C↓TCGAG | 37° No IV CpG | 25 | 100 | 10 | 100 |
| PflM I | FG-PflMI | CCANNNN↓NTGG | 37° 65° III Dcm | 0 | 100 | 100 | 50 |
| Ple I | FG-PleI | GAGTCNNNN↓N | 37° No IV CpG | 75 | 75 | 50 | 100 |
| PluT I | FG-PluTI | GGCGC↓C | 37° No IV CpG | 75 | 25 | 10 | 100 |
| PspG I | FG-PspGI | ↓CCWGG | 37° No IV Dcm | 25 | 100 | 75 | 100 |
| Pst I | FG-PstI | CTGCA↓G | 37° 80° III | 100 | 100 | 100 | 75 |
| Pvu I | FG-PvuI | CGAT↓CG | 37° No III CpG | 25 | 75 | 100 | 50 |
| Pvu II | FG-PvuII | CAG↓CTG | 37° No II | 75 | 100 | 25 | 10 |
| Rsa I | FG-RsaI | GT↓AC | 37° No IV CpG | 100 | 100 | 75 | 100 |
| Sac I | FG-SacI | GAGCT↓C | 37° 65° I | 100 | 75 | 25 | 75 |
| Sac II | FG-SacII | CCGC↓GG | 37° 65° IV CpG | 50 | 100 | 50 | 100 |
| Sal I | FG-SalI | GTCGAC | 37° 65° III CpG | 0 | 0 | 100 | 0 |
| Sau96 I | FG-Sau96I | G↓GNCC | 37° 80° IV CpG Dcm | 50 | 100 | 100 | 100 |
| Sbf I | FG-SbfI | CCTGCA↓GG | 37° 80° IV | 50 | 25 | 10 | 100 |
| Sca I | FG-ScaI | AGT↓ACT | 37° 80° III | 0 | 0 | 100 | 0 |
| Sda I | FG-SdaI | CCTGCA↓GG | 37° 80° IV | 75 | 75 | 0 | 100 |
| Sfi I | FG-SfiI | GGCCN3↓NGGCC | 50° No II CpG Dcm | 25 | 100 | 25 | 100 |
| SgrA I | FG-SgrAI | CR↓CCGGYG | 37° 65° IV CpG | 100 | 100 | 0 | 100 |
| Sma I | FG-SmaI | CCC↓GGG | 25° 65° IV CpG | 0 | 0 | 0 | 100 |
| SnaB I | FG-SnaBI | TAC↓GTA | 37° 80° IV CpG | 100 | 75 | 25 | 100 |
| Spe I | FG-SpeI | A↓CTAGT | 37° 80° IV | 50 | 100 | 75 | 100 |
| Sph I | FG-SphI | GCATG↓C | 37° 65° II | 50 | 100 | 50 | 75 |
| Sse9 I | FG-Sse9I | ↓AATT | 55° 65° I | 100 | 50 | 50 | 75 |
| Ssp I | FG-SspI | AAT↓ATT | 37° 65° IV | 50 | 100 | 25 | 100 |
| Stu I | FG-StuI | AGG↓CCT | 37° 65° IV Dcm | 75 | 100 | 75 | 100 |
| StyD4 I | FG-StyD4I | ↓CCNGG | 37° 65° IV CpG Dcm | 10 | 100 | 100 | 100 |
| Swa I | FG-SwaI | ATTT↓AAAT | 25° 65° III | 75 | 75 | 100 | 25 |
| Taq I | FG-TaqI | T↓CGA | 65° 80° III Dam | 50 | 100 | 100 | 100 |
| TspM I | FG-TspMI | C↓CCGGG | 75° No IV CpG | 50 | 75 | 50 | 100 |
| Tth111 I | FG-Tth111I | GACN↓NNGTC | 65° No IV | 25 | 100 | 100 | 100 |
| Xba I | FG-XbaI | T↓CTAGA | 37° 65° IV Dam | 0 | 100 | 100 | 100 |
| Xho I | FG-XhoI | C↓TCGAG | 37° 80° IV CpG | 50 | 100 | 100 | 100 |
| Xma I | FG-XmaI | C↓CCGGG | 37° 65° IV CpG | 50 | 75 | 25 | 100 |

## Chart Legend

- 25° 37° 50° 55° — Optimal reaction temperature
- I II III IV — Supplied buffer
- CpG Dcm Dam — Cleavage blocked or impaired by CpG, Dam or Dcm methylation
- 65° 80° — Thermal inactivation condition
- No — Not heat inactivatable
- FastCut protocol available
- BalI BamHI DpnII EcoRI — Supplied with unique buffer

# FastGene™ Ligases

- **T4 Ligase will join blunt ends and sticky ends**
- **Quick ligation of DNA fragments in 5 min using the Kickspeed ligation kit**
- **Supplied with optimal buffer conditions for an efficient ligation**
- **Highest activity and purity**

## T4 DNA Ligase

The FastGene® T4 DNA Ligase catalyzes the formation of a covalent bond between the 5′-phosphate and 3′-OH in nicked duplex DNA or at two DNA ends. This activity is very useful to ligate DNA fragments with either cohesive or blunt ends, that are generated by restriction enzyme digestion.

T4 DNA Ligase can also ligate RNA with DNA or RNA in a double helix with low efficiency. The T4 DNA Ligase is cloned and expressed in E. coli, and purified to homogeneity. The Ligase is free of endonuclease, exonuclease and phosphatase.

## Ligation in 5 minutes using the Kickspeed Ligation kit

The FastGene® Kickspeed DNA Ligation kit is formulated for quick ligation of DNA fragments with cohesive ends within 5 min at room temperature.
Or use the Kickspeed 2X DNA Ligation Mix. This is a ready-to-use solution. This master mix enables quick ligation in a short incubation time (< 5min) at room temperature.

## Applications

- Vector construction
- Linker ligation
- Fragment assembly
- Routine cloning

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| FG-T4 | FastGene® T4 DNA Ligase | 20,000 units (400 U/µl) |
| FG-T4BP | FastGene® T4 DNA Ligase | 100,000 units (400 U/µl) |
| FG-T4HC | FastGene® T4 DNA Ligase | 100,000 units (2000 U/µl) |
| FG-LK30 | FastGene® Kickspeed DNA Ligation kit | 30 reactions |
| FG-LK60 | FastGene® Kickspeed DNA Ligation kit | 60 reactions |
| FG-LM50 | FastGene® Kickspeed 2x DNA Ligation kit | 50 reactions |

# Do you want to try it?

You want to test our Restriction Enzymes or Ligases? No problem! Just give us a call or write us an email and get your enzymes very soon.

+49 2421 554960
info@nippongenetics.de
**www.nippongenetics.eu**

# RT-(q)PCR ENZYMES

## CONTENT



# FastGene™ Scriptase Basic

*Perfect Enzymes for Reverse Transcription*


- **Reverse transcriptase for the quantification of gene expression**
- **RNase inhibitor included**
- **For high DNA concentrations**
- **Enzyme only or cDNA Synthesis Kit**

## Optimized for better performance

The FastGene® Scriptase Basic is an enhanced version of the Murine Leukemia Virus (MuLV) reverse transcriptase. Hence, like the wildtype, it has the ability to synthesize a cDNA strand, a reduced RNase H activity and processivity. The robustness however was greatly increased. It is the perfect enzyme for large RNA quantities and easy templates.

## No inhibition - Even at large concentration

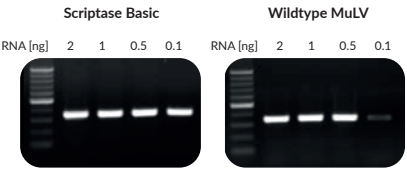
The special buffer formulation permits a high RNA concentration. Other reverse transcriptases are not able to process such large quantities.

## Enzyme only or cDNA Synthesis Kit

The FastGene® Scriptase Basic is available as enzyme only, containing the enzyme, buffer and dNTPs as well as a cDNA Synthesis Kit, which contains the components of the enzyme plus Oligo dTs, random hexamers and RNase inhibitor.

## Designed for endpoint RT-PCR

The FastGene® Scriptase Basic was designed for large RNA quantities, typically used in an endpoint RT-PCR. Nonetheless, it is also able to process lower RNA concentrations.




Higher sensitivity of the FastGene® Scriptase Basic when compared to a wildtype MuLV. The Scriptase Basic is able to produce a template from RNA concentrations as low as 0.1 ng.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS52 | FastGene® Scriptase Basic (20,000 units at 200 U/µl) with buffer and dNTPs | 100 rxn |
| LS62 | FastGene® Scriptase Basic cDNA Synthesis Kit containing Oligo dTs, random hexamer and RNase inhibitor | 100 rxn |

# FastGene™ Scriptase II

*Perfect Enzymes for Reverse Transcription*

- **Reverse transcriptase for the quantification of gene expression**
- **Very low RNase H activity**
- **High yield of full-length cDNA**
- **Synthesis of cDNA from very low amounts of RNA**

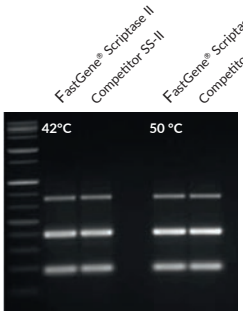
## Everything you need for your reverse transcription

Choose the FastGene® Scriptase II cDNA Synthesis Kit when you want all necessary components to perform a reverse transcription. The kit contains the Scriptase II, Oligo dTs, random hexamer and RNase inhibitor.

Also available as a 5x ReadyMix

## Engineered enyzme for better performance

The reverse transcriptase Scriptase II from FastGene® allows the synthesis of cDNA from very low amounts of RNA. The FastGene® Scriptase II contains mutations within the RNase H domain of the MuLV's reverse transcriptase. Therefore, by reducing the degradation of the RNA during the first-strand synthesis, a higher yield of full-length cDNA is obtained.

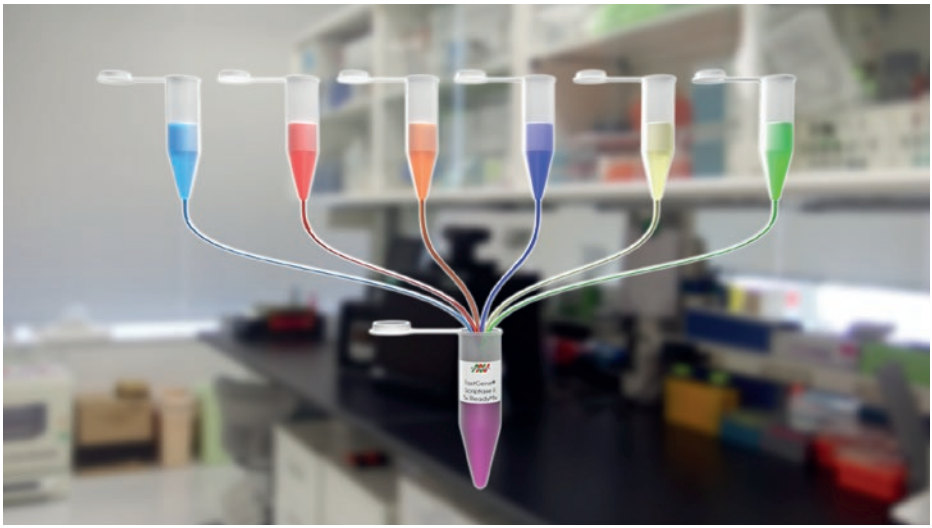



Comparison of multiplex PCR using cDNA produced by Competitor SS-II enzyme and FastGene® Scriptase II at 42°C and 50 °C.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS53 | FastGene® Scriptase II (20.000 units at 200 U/µl) | 100 rxn |
| LS63 | FastGene® Scriptase II cDNA Synthesis Kit containing random hexamer and RNase inhibitor | 100 rxn |
| LS65 | FastGene® Scriptase II cDNA Synthesis Kit containing Oligo dTs, random hexamer and RNase inhibitor | 100 rxn |
| LS64 | FastGene® Scriptase II cDNA Synthesis 5x ReadyMix | 100 rxn |

# FastGene™ Scriptase II - ReadyMix



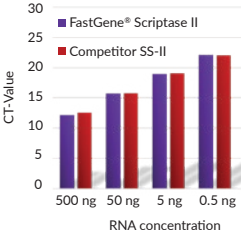
## Reverse transcription: Ready-to-use

The FastGene® Scriptase II cDNA Synthesis 5x ReadyMix comes ready-to-use with all necessary ingredients in just one vial. You just need the Scriptase II ReadyMix and your template and you are ready to go.

## Engineered enzymes - optimized for qPCR

The FastGene® Scriptase II delivers superior cDNA templates for downstream applications, e.g. qPCR and NGS. The resulting full length cDNA gives a complete picture of the gene and is able to show modification, e.g. splicing variants.

**Comparison - GAPDH - qPCR**




Comparison of qPCR results using primers for GAPDH produced by using different RNA starting concentration by FastGene® Scriptase II and competitor SS-II enzyme at 42°C.

**Customer Testimonial**

*"I especially like that the Scriptase II leads to stable results. As a result of performing RT-PCR using tumor derived RNA, we were able to detect the expression of genes, where the amplification was unstable with other RT reagents. The amplification of full-length cDNA has also been confirmed. I would love to also try the 5x ReadyMix."*

**Haruko Hayasaka**
Department of Bioscience and Biotechnology,
Kinki University, Osaka, Japan

★★★★★

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS53 | FastGene® Scriptase II (20.000 units at 200 U/µl) | 100 rxn |
| LS63 | FastGene® Scriptase II cDNA Synthesis Kit containing random hexamer and RNase inhibitor | 100 rxn |
| LS64 | FastGene® Scriptase II cDNA Synthesis 5x ReadyMix | 100 rxn |
| LS65 | FastGene® Scriptase II cDNA Synthesis Kit containing Oligo dTs, random hexamer and RNase inhibitor | 100 rxn |

**Technical Note**
2017 <01>

## Technical Data — Very fast reverse transcription reactions

### Purpose

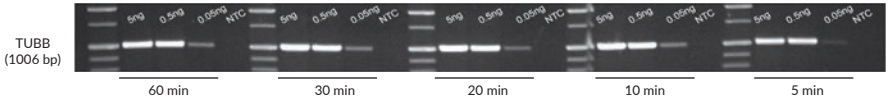
FastGene® Scriptase II is an engineered reverse transcriptase, able to deliver highest quality cDNA from a small amount of RNA. Optimization of enzymatic design has led to one of the most reactive RT-enzymes. This technical note shows the investigation of the minimum time possible of a reverse transcription. We were able to shorten time to 5 minutes with different concentrations of RNA. The resulting cDNA was used in endpoint PCR as well as in qPCR experiments.

### Method

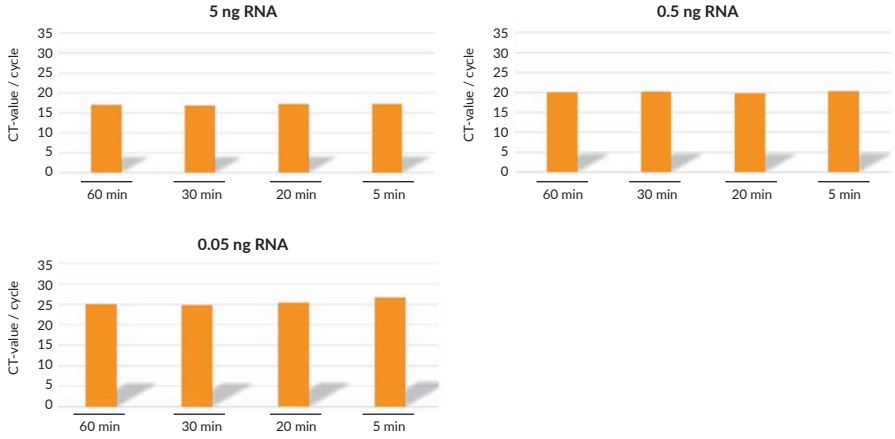
- FastGene® Scriptase II cDNA Synthesis Kit (LS63)
- RNA: Universal Human Reference RNA (Agilent Technologies) Input RNA amount: 5 ng, 0.5 ng, 0.05 ng
- Primer:
  - TUBB (1006 bp): Endpoint PCR
  - GAPDH (138 bp): qPCR

### Result

1 Endpoint PCR




2 Quantitative PCR




### Conclusion

FastGene® Scriptase II was able to produce cDNA in 5 minutes.
Result 1: For large PCR products, the band of 0.05 ng RNA after 5 min was slightly weaker. Hence, for products of 1000 bp a 10 min RT step is recommended for low RNA amounts.
Result 2: No difference in CT-value exceeding ± 1 cycle was detected.
FastGene® Scriptase II can therefore be recommended for short-term reverse transcripton reactions.

# FastGene™ Optima HotStart ReadyMix


- Proofreading DNA polymerase
- ReadyMix - Just add your template and primer
- Very complex templates (up to 20 kb)
- Extreme fidelity
- Problem solver

## Processivity, fidelity and big fragments

The FastGene® Optima polymerase is a mixture of two different types of PCR enzymes – a Taq polymerase and a modified type-B polymerase with excellent proof-reading abilities. Each enzyme is purified using three different chromatography technologies which results in a very high purity and activity. Optima is extremely robust making it ideal for a broad range of PCR applications. Standard PCR, difficult PCR, and very long amplicons (over 7.5 kb) are a piece of cake for this enzyme mixture.

## Optimal efficiency for GC-rich templates

Most polymerases have a very low amplification efficiency if the template DNA is GC-rich. As seen in Fig. 2, the FastGene® Optima has an excellent amplification efficiency even with GC rich templates, which is even higher compared to the efficiency of polymerases especially designed for GC-rich templates (Fig. 2).

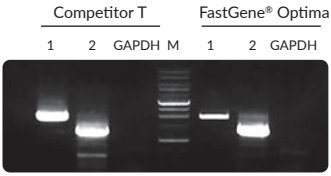



Fig. 2: Comparing the ability of Competitor T's and FastGene® Optima polymerase mixture to amplify GC-rich DNA fragments. Two fragments of 60.7% and 64.3% were amplified resulting in two products of 1839 bp and 1260 bp, respectively. FastGene® Optima had a higher efficiency compared to Competitor T's polymerase mixture.

## Optimal robustness for very complex samples

The FastGene® Optima can handle very complicated templates. The highly purified Taq polymerase gives high efficiency while the proof-reading polymerase guarantees the fidelity. The robustness of both enzymes makes the amplification of complex tissue, such as liver (Fig. 1), possible.

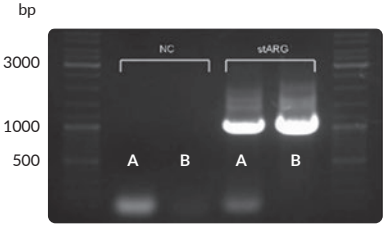



Fig. 1: The comparison between (A) the "best-selling" blended Taq mix and (B) FastGene® Optima polymerase mixture using the hard to amplify catshark liver DNA as template. The PCR product has a size of 1030 bp and was separated onto an 1.2% agarose gel. The FastGene® Optima produces much less primer dimers and has a higher amplification efficiency.

Robustness "of a Rhino" is the key advantage of the Optima DNA polymerase. Do you have any problems with your PCR? Just try the Optima - you will get reliable and reproducible results. Anytime!

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS29 | FastGene® Optima HotStart ReadyMix | 500 x 25 µl reactions (6.25 ml total volume) |

# FastGene™ Optima HotStart ReadyMix

## Optimal for SNP-typing

The detection of single nucleotide polymorphism (SNP) requires extreme fidelity. The proof-reading activity guarantees this needed fidelity (Fig. 3).

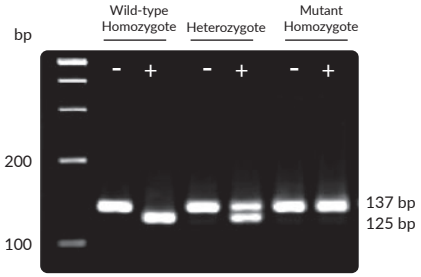



Fig. 3: SNP typing of the ALDH gene using FastGene® Optima polymerase. The ALDH classified as human sensitivity to alcohol gene was analysed for presence of a SNP by digesting the amplification of homo- and heterozygotes using MboII.

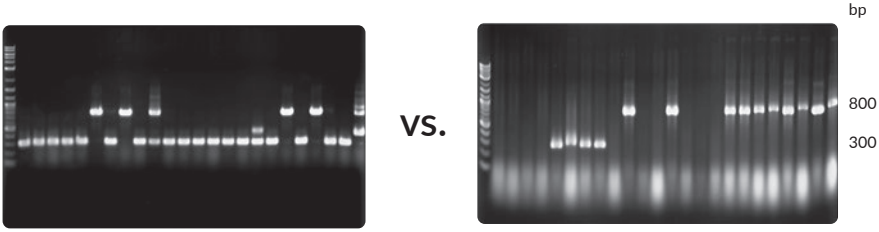
## HotStart - It is your decision when to start

For those labs that prefer low primer-dimer and easy, room temperature set-up, the HotStart-version of the FastGene® Optima is your best choice. Designed as a master mix, Optima HotStart ReadyMix combines the superb efficiency and robustness of the Optima enzyme mix with a proprietary antibody that inhibits preliminary unspecific reaction. This antibody is permanently denatured during the primary activation step. The HotStart ReadyMix comes with all the necessary ingredients for optimal PCR. Just add your template and primers. Additionally, the ReadyMix contains a loading dye, meaning that the PCR sample can be directly loaded onto an agarose gel.

## Applications

- RT-PCR
- Very complex templates
- GC-rich templates
- SNP Analysis
- Multiplex PCR
- Any standard PCR application


## Direct PCR from *E. coli* colonies




Direct PCR from *E. coli* colonies using FastGene® Optima HotStart ReadyMix (left gel) or "best-selling" blended Taq mix (right gel). The ReadyMixes were used to determine the presence or absence of inserts. The Optima HotStart ReadyMix yielded a clear electrophoretic pattern without smearing. In addition, Optima was able to amplify clean product from EVERY colony. The competitor was not able to amplify 10 colonies.

**Customer Testimonial**

*"We tested very successfully the HotStart ReadyMix for duplex-PCR of cDNAs from our knock-down mutants. The PCR reactions show no unspecific products. Additionally this product has an excellent price performance ratio"*

**Dr. Matthias Schmidt**
Institute for Molecular Life Science
Goethe University, Frankfurt, Germany

★★★★★

# FastGene™ apTaq HotStart Polymerase

- HotStart: Very fast PCR
- Aptamer technology: Reversible enzyme activation or inactivation
- Maximal specificity, sensitivity and yield
- Robust and reliable reaction
- Tolerate a wide range of templates

## Redefine your PCR

The FastGene® apTaq DNA polymerase is a recombinant and thermostable Taq-Polymerase using the aptamer based HotStart activation technology. The aptamer allows a reversible and immediate activation of the polymerase, leading to specific priming and a very fast PCR.

## Reversible polymerase activation – The aptamer principle

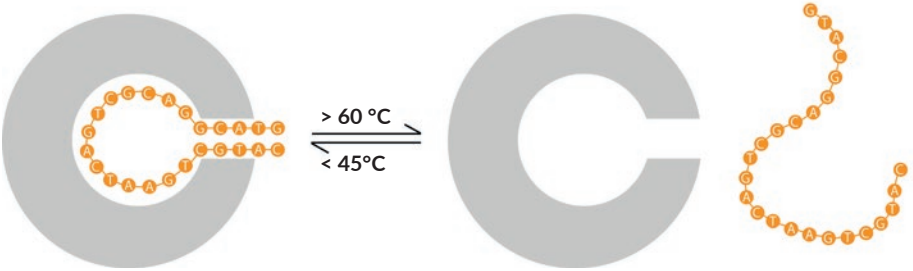
The FastGene® apTaq DNA-Polymerase is a HotStart enzyme, which is completely inactive during room-temperature and becomes active only after heating. Random primer annealing and unspecific amplification that can occur with standard PCR enzymes are problems of yesterday. In contrast to antibody-based methods, the apTaq DNA-Polymerase contains synthetically manufactured aptamer-oligonucleotides. At low temperatures, the polymerase is inactivated through a reversible tight bond of the aptamer. Interestingly, the aptamer acts as a molecular switch, changing its tertiary structure at higher temperatures. Temperatures below 45°C deactivate the polymerase, whereas temperatures above 60 °C fully activate the enzyme. Therefore, the FastGene® apTaq DNA-Polymerase is less temperature-sensitive and reduces the risk of contamination.

## Applications

- Fast PCR
- Routine PCR
- PCR using complex templates
- SNP Analysis
- Any standard PCR application

Inactive apTaq Polymerase inhibited by aptamer

Active apTaq Polymerase with denatured aptamer

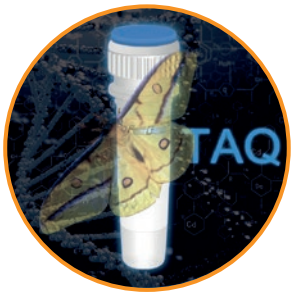



The polymerase aptamer-oligonucleotide mixture is a reversible, temperature-dependent HotStart system.

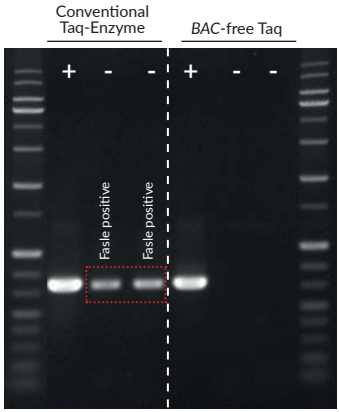
## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS34 | FastGene® apTaq HotStart Polymerase | 500 Units |

# FastGene™ BAC-free Taq




- **DNA polymerase with no bacterial contamination**
- **Prevents false positive PCR results from bacterial DNA**
- **Perfect for bacterial genome analysis**




Amplification of a non-ribosomal gene using *E. coli* DNA (+) or no template control. No template control (-) was amplified with standardly produced Taq vs FastGene® BAC-free HS Taq. The conventional Taq produced a product despite being a non-template control while there was no product in the FastGene® BAC-free HS Taq. This indicates a bacterial genomic DNA contamination of the conventional Taq polymerase.

## Free of any bacterial contamination

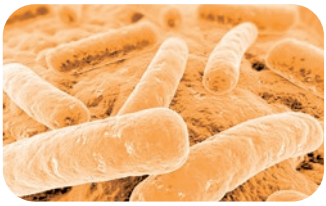
The FastGene® BAC-free HotStart Taq DNA polymerase is based on the single-subunit, wild-type Taq DNA polymerase of the thermophilic bacterium *Thermus aquaticus*. It is, however, not a bacterial recombinant protein but purified from an eukaryotic expression system. Contaminating DNA present in most other polymerase preparations often precludes or obscures the accurate interpretation of results, especially when targeting conserved sequences (e.g. bacterial 16S rRNA region).

## Eukaryotic expression system - No more false positive

Performing PCR with bacterial templates could lead to a false positive result, when using Taq enzymes purified from *E. coli* expression systems due to a contamination of the Taq enzyme with prokaryotic genomes. The FastGene® BAC free HotStart Taq DNA Polymerase is produced using eukaryotic cells. Hence, no bacterial genome is present.

## Applications

- Bacterial genome analysis
- Pathogen detection
- Amplification of low copy DNA templates
- Multiplex PCR
- Specific amplification of complex templates
- RT-PCR

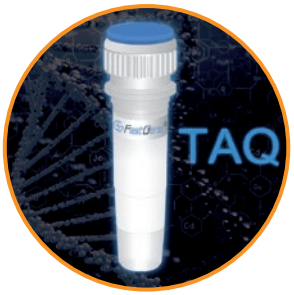


Best choice for 16S/23S microbial screening, *E. coli* contamination and forensic studies.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS33 | FastGene® BAC-free HotStart TAQ Polymerase | 500 Units |

# FastGene™ TAQ DNA Polymerase




## Taq polymerase with a high purity

The FastGene® DNA Polymerase is based on the single subunit, wild-type Taq DNA polymerase of the thermophilic bacterium *Thermus aquaticus*. The enzyme is purified using three different chromatography technologies and results in a very high purity and activity.

## Two different reaction buffers

The enzyme comes with 2 different reaction buffers. Buffer A is a "high yield" buffer, for most amplicons. Buffer B is a standard KCl-based Taq buffer with a higher sensitivity.

**Customer Testimonial**

*"We are happily using the FastGene® Taq DNA polymerase for over 12 months for routine SNP-analysis. We have chosen FastGene® Taq DNA polymerase since we needed a robust and reliable polymerase. We are very happy with it and the price-performance ratio is excellent!"*

**Dr. J. Wagner**
PlantaLyt GmbH, Hannover, Germany

★★★★★

| Cat. No. | Product | Content |
|---|---|---|
| LS21 | FastGene® TAQ DNA polymerase | 500 Units |
| LS22 | FastGene® TAQ DNA polymerase | 2000 Units |

# FastGene™ TAQ Ready Mix


## Everything you need for your PCR

The FastGene® Taq ReadyMix (2X) is a ready-to-use cocktail with two inert tracking dyes and containing all components for PCR, except for primers and template. The 2X ReadyMix contains FastGene® Taq DNA polymerase, Taq buffer, dNTPs, $MgCl_2$ and stabilizers.


FastGene® Taq reactions with 1X loading dye reaction buffer. (A) Volumes above wells indicate the volume of the PCR reaction loaded on the gel. (B) On a 1% agarose gel, the blue dye migration corresponds to a 5 kb DNA fragment, and the yellow dye migrates at 75 bp.

| Cat. No. | Product | Content |
|---|---|---|
| LS26 | FastGene® TAQ Ready Mix PCR Kit | 50 x 50 µl reactions |
| LS27 | FastGene® TAQ Ready Mix PCR Kit | 250 x 50 µl reactions |

# The "home" of the Taq-Polymerase

When the PCR was first described, the Klenow fragment derived from the Escherichia coli DNA Polymerase I was the paramount enzyme for sequence extension. Due to its lack of stability at high temperature, it needs to be replenished before each cycle.

The Taq DNA Polymerase was isolated from thermus aquaticus, a bacterium found originally at the Lower Geyser Basin of Yellowstone National Park. Due to its heat stability, this enzyme eliminates the need to replenish the enzyme at each denaturation cycle and therefore revolutionized the PCR.

# DNAreleasy Advance

## From cells to PCR in 15 minutes

Are you tired of the time-consuming extraction processes and costly spin columns that you've been using to prepare samples for DNA amplification? With the DNAreleasy Advance Direct Lysis Kit, we now have a better solution. This new cell lysing reagent requires only a 15 minutes incubation in a thermal cycler before the DNA is ready-to-use directly in your PCR — without any further sample processing!

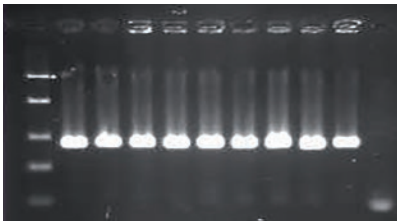
- **PCR done the easy way**
- **Successful lysis of different biological material**
- **Very easy-to-use**

## Successfully used samples

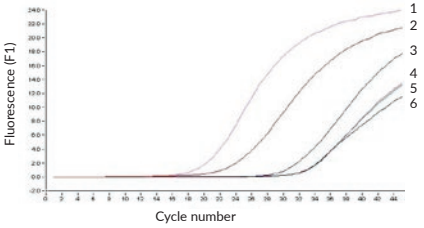
- Saliva
- Hair roots
- Animal tissue (horse, pig liver, etc.)
- Mouse tails and ears
- Plants (leaf, blossom, pollem): Cabbage, maize, canola, soya, sugar beef, etc.)
- Drosophila
- Yeast
- Mollusca

## Very easy procedure


Using DNAreleasy Advance is really easy. Just mix cells with 20 µl of the reagent, place in a a thermal cycler or incubator and heat at 65°C for 5 minutes, followed by 96°C for 5 minutes before holding at 20 °C for 5 minutes. After the lysis, a part or all of the lysate can be added directly to your PCR mix or it can be stored at -20 °C for future use.



Genomic DNA from scallops was isolated with DNAreleasy Advance, and a part of the supernatant was directly added to the PCR reaction. The agarose gel shows the high yield obtained.




Genomic DNA was isolated using DNAreleasy Advance and analyzed by qPCR: (1) positive control human DNA, (2) saliva, (3) hair root, (4) pig liver, (5) drosophila melanogaster, (6) horse meat.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS05 | DNAreleasy Advance | 300 µl, 10 reactions |
| LS06 | DNAreleasy Advance | 1.5 ml, 50 reactions |

# NGS-Library Quantification Kit

- **Quantification of Illumina® NGS-libraries**
- **Preventing variability in the cluster density**
- **Reproducible determination of sequenceable library concentration**
- **Specific primer included**

## Accurate and sensitive qPCR-based quantification

The accurate quantification of NGS Illumina® Libraries is very important for maximizing data output and quality on every sequencing run. The FastGene® NGS-Library Quantification Kit contains all reagents for an accurate and reproducible qPCR-based quantification of Illumina® Libraries: The kit comes with specific primers, qPCR Master Mix and DNA standard.

The FastGene® NGS Library Quantification Kit was developed to reduce the variability in cluster density, resulting in improved sequencing results. The standards have been designed to allow a perfect concentration determination. The superior qPCR Master Mix included in the FastGene® NGS Library Quantification Kit is able to detect even the smallest amount of libraries.

## Applications

- Quantification of Illumina® NGS-Libraries
- Preventing variability in the cluster density
- Reproducible determination of sequenceable library concentration


(A) Theoretical result of a library quantification. The library of interest is diluted, and a qPCR experiment is performed using the diluted library of interest and the known FastGene® NGS Standards. (B) A calibration curve is formed and used to determine the concentration of the sequencing competent libraries.

**Customer Testimonial**

*„We have tested the FastGene® NGS Library Quantification Kit and compared the results to competitor K, which is normally used in the lab. The quantification of three libraries was possible with the FastGene® NGS Library Quantification Kit and the results were comparable to the results obtained with the Competitor K´s library quantification kit!"*

**Dr. Massimo Pindo,**
Genomics Platform - Unità Genomica e Biologia Avanzata,
San Michele all'Adige, Italy

★★★★★

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS80 | FastGene® NGS-Library Quantification Kit | 500 reactions |
| LS81 | FastGene® NGS-Library Quantification Standards | 5x Standards (each 80 µl) |

# FastGene™ IC Green qPCR Universal Kit


## Universal - for any qPCR instrument

The FastGene® IC Green Kit is universal. The reference dyes come in a separate vial and can be added to the master mixes once. Hence, this kit can be used with qPCR instruments which need a high ROX™ concentration as well as instruments that need a low concentration or no ROX™. There is even a special version with fluorescein.

## Applications

- Quantification of gene expression
- Quantification of gene copy number
- Melt-curve analysis
- Detection of gene expression (knock-out analysis)

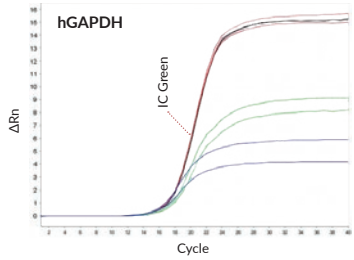
## No inhibition - For the highest sensitivity

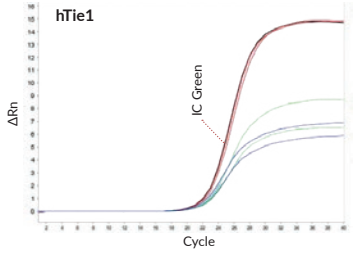
It is well-known that SYBR® Green is extensively inhibiting the qPCR. This fact led to the development of SYBR® resistant enzymes. An alternative approach is to develop a dye that does not inhibit the reaction. This dye is named FastGene® IC Green. FastGene® IC Green is an intercalating dye, only detecting double stranded DNA. By not inhibiting the reaction, the FastGene® IC Green Kit is able to detect genes at a lower CT-value, creating a higher sensitivity!

The superior buffer chemistry enables the detection of low copy number genes, which could not be detected with other dyes. The comparison to competitors shows that FastGene® IC Green is one of the best qPCR mixes available. This has been confirmed by customers analysing many different genes.

## Robust chemistry for faster results

The FastGene® IC Green buffers were designed to have a superior robustness. This guarantees the linearity of the qPCR and creates a better accuracy, essential for reproducible results. Additionally, qPCRs can be performed at shorter amplification times, for example using fast protocols.




Comparison of FastGene® IC Green (black & red) with the market leading competitors KB (green) and T (blue). The differences of the $C_T$-values were under 1 cycle.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS4001 | FastGene® 2x IC Green Universal (ROX™) | 100 reactions |
| LS4005 | FastGene® 2x IC Green Universal (ROX™) | 500 reactions |
| LS4050 | FastGene® 2x IC Green Universal (ROX™) | 5000 reactions |
| LS4101 | FastGene® 2x IC Green Universal (Fluorescein) | 100 reactions |
| LS4105 | FastGene® 2x IC Green Universal (Fluorescein) | 500 reactions |
| LS4150 | FastGene® 2x IC Green Universal (Fluorescein) | 5000 reactions |

# FastGene™ Probe qPCR Universal Kit


## Perfect efficiency

For the FastGene® Probe qCPR, use hydrolysis probes, enabling multiplex, and leading to very specific signal and low to none background fluorescence. The buffer chemistry, combined with optimal primer design, is the most important part of a Probe assay based reaction. Here we present the superior buffer system of the FastGene® Probe Universal Kit.

Get a very high dynamic range and reproducible results by using the FastGene® Probe Universal mix. Achieve higher efficiencies and more accurate results.

## Save time with fast protocols

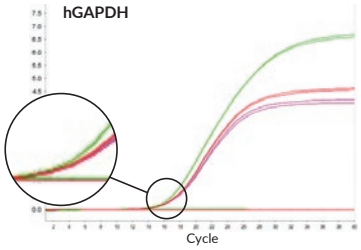
The unique buffer composition enables a faster reaction: apply a fast protocol, available on many modern qPCR instruments, and save plenty of time.

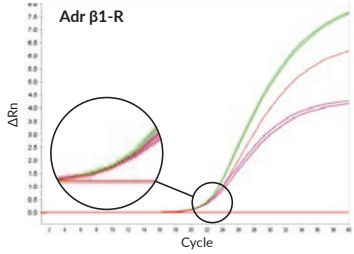
## Robust chemistry for multiplexing

The robustness of the buffer ensures the ability to perform multiplex qPCR. Get the highest sensitivity for multiple targets using the FastGene® Probe Universal Kit. The FastGene® Probe Universal Kit is compatible with all real time PCR instruments.

## Applications

- Quantification of gene expression
- Quantification of gene copy number
- Multiplex qPCR
- SNP genotyping
- NGS validation




Reactions (25 µl) were set up according to manufacturer's instructions, with 25 ng of hgDNA as template, and 0.5 µM of each primer. PCR was performed for a total of 35 cycles. Green: Competitor KB. Red: Competitor T. Pink: Probe qPCR Universal Kit.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS4501 | FastGene® 2x Probe Universal (ROX™) | 100 reactions |
| LS4505 | FastGene® 2x Probe Universal (ROX™) | 500 reactions |
| LS4550 | FastGene® 2x Probe Universal (ROX™) | 5000 reactions |

# FastGene™ IC Green 1-Step RT-qPCR


## Robust chemistry for 2 reactions in one tube

The FastGene® IC Green 1-Step mix contains a reverse transcriptase and a DNA polymerase. Having a 1-tube reaction setup for the reverse transcription and for the quantitative PCR has many advantages: 1) The 2x master mix ensures the same concentration of buffer and enzyme when performing the experiment multiple times, 2) it is less prone to wrong mixtures of the reaction mix contents, 3) higher convenience due to less preparation time, and many more.

## Applications

- Quantification of gene expression
- Quantification of gene copy number
- Melt-curve analysis
- Detection of gene expression (knock-out analysis)

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS4301LR | 2x FastGene® IC Green 1-Step Mix (low ROX™) | 1 ml (100 reactions) |
| LS4305LR | 2x FastGene® IC Green 1-Step Mix (low ROX™) | 5 x 1 ml (500 reactions) |
| LS4301HR | 2x FastGene® IC Green 1-Step Mix (high ROX™) | 1 ml (100 reactions) |
| LS4305HR | 2x FastGene® IC Green 1-Step Mix (high ROX™) | 5 x 1 ml (500 reactions) |

# FastGene™ Probe 1-Step RT-qPCR


## High-performance enzymes for incredible sensitivity

The FastGene® Probe 1-Step Mix was developed for the rapid detection of multiple gene expressions using multiplex qPCR directly from RNA. The optimal conditions for the reverse transcription as well as for the DNA polymerisation ensures highest sensitivity and the detection of low copy genes.

## Applications

- Quantification of gene expression
- Quantification of gene copy number
- Multiplex qPCR
- SNP genotyping
- NGS validation

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| LS4701LR | 2x FastGene® Probe 1-Step Mix (low ROX™) | 1 ml (100 reactions) |
| LS4705LR | 2x FastGene® Probe 1-Step Mix (low ROX™) | 5 x 1 ml (500 reactions) |
| LS4701HR | 2x FastGene® Probe 1-Step Mix (high ROX™) | 1 ml (100 reactions) |
| LS4705HR | 2x FastGene® Probe 1-Step Mix (high ROX™) | 5 x 1 ml (500 reactions) |

# Free Sample?

You want to test our DNA polymerases or our qPCR reagents? No problem! Just give us a call or write us an email and get your free sample very soon.

+49 2421 554960
info@nippongenetics.de
**www.nippongenetics.eu**

# LAB PLASTIC



## CONTENT

# FastGene™ Filter Tips

*Quality Made in Japan*

- **Compatible with many pipettes**
- **Highest quality control**
- **Easy-to-use and ecological refill system**

## More than just plastic

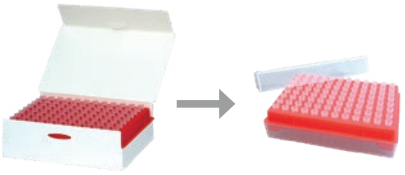
To improve precision and handling, NIPPON Genetics EUROPE provides high quality and modern filter tips. Their maximum compatibility and conformity with a large number of pipettes enable accuracy and comfortability for the daily laboratory work.

## Japanese quality

All our filter tips are made in Japan. Quality control is one of the highest priorities. This ensures that our tips are free of faults, such as misplacement of the filter, broken tips, missing tips, endotoxins, etc.. All of our tips are free of RNase, DNase, genomic DNA and proteins.

## Easy-to-use PaperRefill system

The FastGene® PaperRefill System is a more ecological way compared to standard refill systems. Just insert the new pipette tip rack in your filter tip box without any tip wobbling during refill.



**Customer Testimonial**

*"We have been using the refillable filter tips from Nippon Genetics for a broad spectrum of molecular biology techniques, including NGS and array-CGH. We are impressed by their high manufacturing quality and ease of use. The tips are long and thin and the filter does not come in contact with the liquid even if you fill it to the maximum. They also exhibit minimum retention of liquids. It is very easy to refill the empty tip boxes (spare tips come in pre-filled and sterile racks) and by using that system you produce less plastic waste! We highly recommend these tips to all researchers looking for excellent quality, value-for-money filter tips!"*

**D. Palaiologou, PhD**
Genesis Genoma Lab,
Chalandri, Greece

★★★★★

# FastGene™ Filter Tips

*Quality Made in Japan*

## Precision for lowest volume

The FastGene® Filter Tips come in three different versions for the lowest volumes:

- Filter Tips 10 µl short: The small size guarantees easier handling in such small wells (e.g. 96-well plates or PCR Tubes).
- Filter Tips 10 µl long: Very useful to avoid contamination of the pipette with samples stored in larger tubes.
- Filter Tips 20 µl: The best option for larger volumes with a small tip.

10 µl short

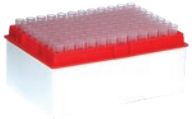
10 µl long

| Cat. No. | Product | Content |
|---|---|---|
| FG-FT10S | 10 µl short | 10 racks with 96 tips |
| FG-FT10SRF | 10 µl short refill | 10 racks with 96 tips |
| FG-FT10L | 10 µl long | 10 racks with 96 tips |
| FG-FT10LRF | 10 µl long refill | 10 racks with 96 tips |

20 µl

| Cat. No. | Product | Content |
|---|---|---|
| FG-FT20 | 20 µl | 10 racks with 96 tips |
| FG-FT20RF | 20 µl refill | 10 racks with 96 tips |

## Precision for larger volumes



100 µl

| Cat. No. | Product | Content |
|---|---|---|
| FG-FT100 | 100 µl | 10 racks with 96 tips |
| FG-FT100RF | 100 µl refill | 10 racks with 96 tips |

200 µl

| Cat. No. | Product | Content |
|---|---|---|
| FG-FT200 | 200 µl | 10 racks with 96 tips |
| FG-FT200RF | 200 µl refill | 10 racks with 96 tips |

1000 µl

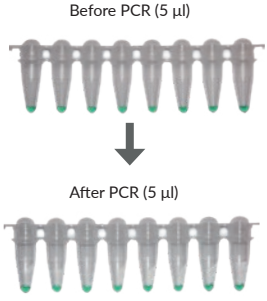
| Cat. No. | Product | Content |
|---|---|---|
| FG-FT1000 | 1000 µl | 10 racks with 96 tips |
| FG-FT1000RF | 1000 µl refill | 10 racks with 96 tips |

# FastGene™ PCR Tubes

- **Compatible with most thermal cyclers**
- **Reproducible PCR results**
- **Free of RNase, DNase and human genomic DNA**

## No evaporation

The evaporation of samples is a well-known error factor which depends on the quality of the PCR plastic. This is very important especially for users that perform low volume (5 - 10 µl) PCR. Therefore, the FastGene® PCR Tubes and strips are intensively tested, under very stringent conditions.




Evaporation test: PCR samples were mixed with 5 µl of a coloured dye. The total volume was determined before and after PCR.

## Guaranteed quality made in Japan

The performance and reproducibility of your PCR result is significantly influenced by plastics. As a result of a unique manufacturing process, our FastGene® PCR single tubes and 8-well strips fulfill the highest requests of quality. All FastGene® PCR plastic products are manufactured by using ultra pure polypropylene. Proteins are not able to bind to the surface. The tubes and strips have very thin walls but they are extremely stable and robust. Because of a very stringent QC procedure the „batch-to-batch" reproducibility of all plastics is extremely high.

## It ain't rocket science any more

PCR used to be considered an art. But over the past 25 years since its general acceptance into scientific experimentation, PCR has become one of the best characterized bioenzymatic processes. To this end, we ask you this simple question: Why pay prices that do not reflect this fact? All of NIPPON Genetics PCR products are priced fairly and promise satisfying results. It's that simple.


## Get your free sample

If you're interested to try our PCR tubes with the conventional thermal cycler on your bench, just request a sample – we'd be happy to oblige.

# FastGene™ PCR Tubes

## 0.1 ml PCR Tubes

0.1 ml PCR single tubes with flat caps (1000)
***Cat. No.: FG-011F***

0.1 ml PCR 8-well strips with single flat caps (120)
***Cat. No.: FG-018WF***

0.1 ml flat cap strips (120)
***Cat.No.: FG-008FCP***

0.1 ml PCR 8-well strips and flat cap strips (120)
***Cat. No.: FG-017FC***

0.1 ml PCR 8-well strips (120)
***Cat. No.: FG-018***

## 0.2 ml PCR Tubes

0.2 ml PCR single tubes with flat caps (1000)
***Cat. No.: FG-021F***

0.2 ml PCR single tubes with domed caps (1000)
***Cat. No.: FG-021D***

0.2 ml PCR 8-well strips with single flat caps (120)
***Cat. No.: FG-088WF***

0.2 ml PCR 8-well strips with single domed caps (120)
***Cat. No.: FG-088WD***

0.2 ml PCR 8-well strips without caps (120)
***Cat. No.: FG-028***

0.2 ml flat cap strips (120)
***Cat.No.: FG-008FC***

0.2 ml domed cap strips (120)
***Cat.No.: FG-008DC***

0.2 ml PCR 8-well strips and flat cap strips (120)
***Cat. No.: FG-016FC***

0.2 ml PCR 8-well strips and domed cap strips
***Cat. No.: FG-016DC***

**Application Note**
2016 <2>

## Application — Comparing PCR tubes for Multiplex Probe-based Assay on a Rotor-Gene® Q

| | |
|---|---|
| Product | FastGene® 0.2 ml PCR tubes with flat caps (FG-021F) |
| Manufacturer | NIPPON Genetics EUROPE |

The following data is kindly provided by Dr. Birgit Klinkert, ARDEYPHARM GmbH, Herdecke, Germany

### Background

The detection of the non-pathogenic *Escherichia coli* strain Nissle 1917 (EcN) in stool samples is standardly performed in this laboratory using strain specific TaqMan® Probes. Here, the signal of the manufacturer's original plastic was compared to the FastGene® PCR Tubes from NIPPON Genetics EUROPE.

### Method

- PCR tubes

1) FastGene® 0.2 ml PCR tubes with flat caps (Cat. No.: FG-021F)
2) Original 0.2 ml Rotor-Gene® tubes (Cat. No.: 981005)

- qPCR Instrument

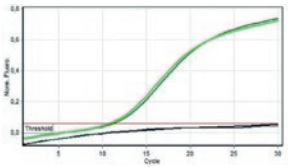
QIAGEN® Rotor-Gene® Q Mdx 5plex


- Probes-labels

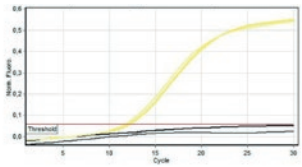
1) FAM™ (green channel) - Reporter primer designed to detect specific EcN plasmids
2) HEX (yellow channel) - Reporter primer designed to detect specific EcN plasmids
3) ROX™ (orange channel) - Reporter primer designed to detect specific regions in the EcN genome
4) Cy5 (red channel) - Reporter primer as a positive PCR control and designed to detect common enterobacteriae sequences

### Results

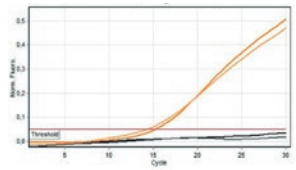
1) FAM™ - Probe (green channel)



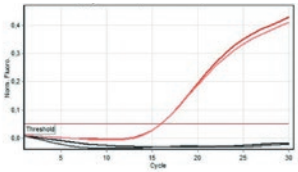

2) HEX-Probe (yellow channel)




1) ROX™ - Probe (orange channel)




2) Cy5 - Probe (red channel)




Customers comment

**Dr. Birgit Klinkert:**

The lid of the FastGene® 0.2 ml PCR tubes are different from the original. Nonetheless, the lock mechanism of the Rotor-Gene® Q Mdx worked perfectly with them. The fluorescence of the probes in the reaction are measured at the tip of the tubes. We can recommend to replace the original tubes for the here tested fluorescent probes without any restriction.

# FastGene™ CapEasy

## For capping and decapping

The CapEasy was created to keep your daily labwork simple and less stressful. Sealing or removing the caps on 8-well and 12-well PCR strip tubes can often lead to loss of sample, cross contamination, and sore fingers.

This can be avoided by using the CapEasy Tool. The uniformly distributed pressure delivered by this nifty product ensures perfect sealing of all wells regardless of domed or flat lids. When access to the contents of the strip tubes is needed, removing the lids is done in a single smooth motion without the chance of knocking the sample out of the tube.

## PCR tube recommendation

- 0.1 ml PCR 8-well strips and flat cap strips
  Cat. No.: FG-017FC
- 0.2 ml PCR 8-well strips and flat cap strips (120)
  Cat. No.: FG-016FC
- 0.2 ml PCR 8-well strips and domed cap strips
  Cat. No.: FG-016DC

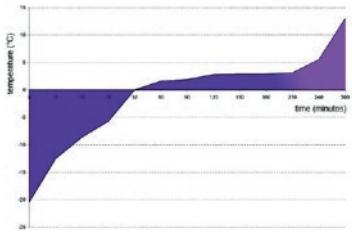
## Ordering information

| Cat. No. | Product |
|---|---|
| FG-CDC02 | FastGene® CapEasy |

# FastGene™ Stay Cool Rack

## Changing colours

The Stay Cool Rack with a lid combines the possibility to cool your samples with the well-known 96-well format. This rack can keep the temperature below 7°C for 3-4 hours, if it was stored at -20 °C before. An indicator gel inside the rack will change the colour from purple to pink if the temperature is 7°C or higher. This indicator will work for every single well. At the beginning, you will see that the outer wells will change their colour first, whereas the wells in the centre of the plate still keep a lower temperature. The gel filling is neither toxic nor hazardous. It is suitable for 0.1 and 0.2 ml PCR single tubes, 8-well strips or 96-well plates.




Temperature and colour profile of the Stay Cool Rack.

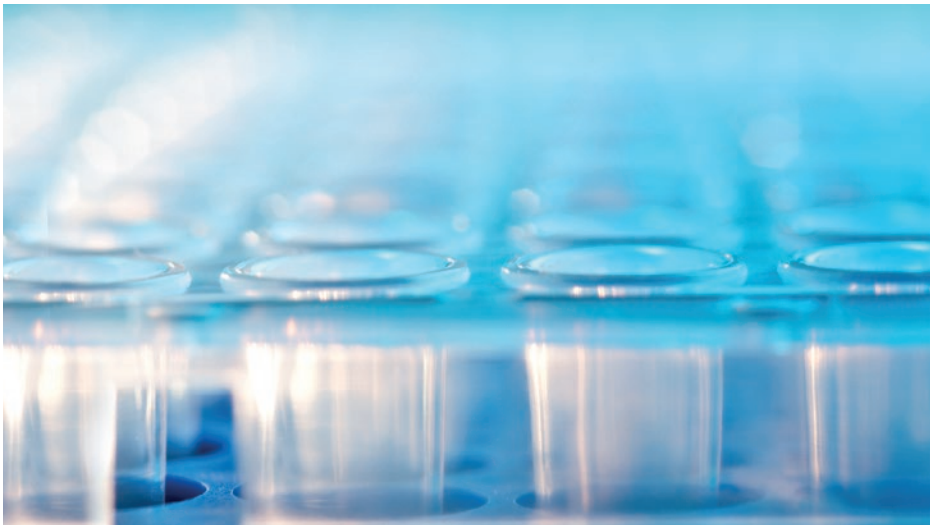
## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| FG-20 | FastGene® Stay Cool Rack | 2 racks |

### Stay Cool Rack at -20 °C

### Stay Cool Rack at room temperature

# FastGene™ PCR Plates



- Compatible with most thermal cyclers
- Raised well rims to avoid cross contamination
- Free of RNase, DNase and human genomic DNA
- Compatible with heat sealing foils

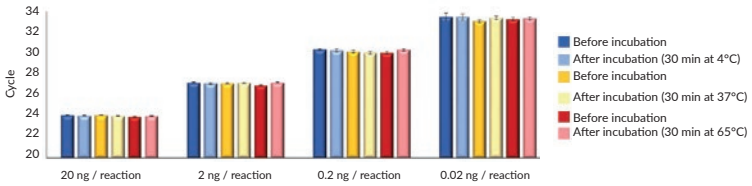
## Guaranteed quality made in Japan

The FastGene® PCR Plates are manufactured and tested for compatibility with leading manufacturers thermal cyclers. Due to the thin-walled design, which optimises heat transfer, the reaction becomes more specific.

All FastGene® PCR plastic products are manufactured by using ultra pure polypropylene. Proteins are not able to bind to the surface. Because of a very stringent QC procedure the „batch-to-batch" reproducibility of all PCR Plates is extremely high.

## DNA adsorption test with the FastGene® 96-well PCR plate (FG-170225)

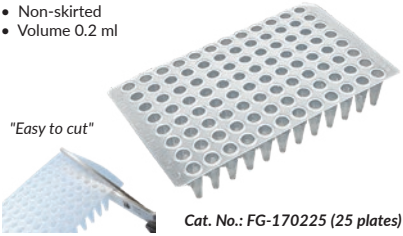
**Method:**
Comparison of the DNA concentration after the incubation of different temperatures (4°C, 37°C, 65°C) compared to control DNA amount before incubation. DNA concentration was determined using qPCR quantification.




**Result/Conclusion:**
The incubation tests under all conditions showed no significant decrease of DNA concentration after incubation in comparison with the control DNA amount. This means that the FastGene® plastic shows no binding of DNA.

# FastGene™ PCR Plates

FastGene® 96-well Plate
- Non-skirted
- Volume 0.2 ml

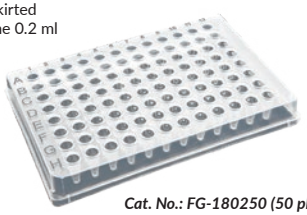



***Cat. No.: FG-170225 (25 plates)***

FastGene® 96-well Plate
- Semi-skirted
- Volume 0.3 ml

***Cat. No.: FG-190250 (50 plates)***

FastGene® 96-well Plate
- Full-skirted
- Volume 0.2 ml



***Cat. No.: FG-180250 (50 plates)***

FastGene® 96-well Plate FROSTED ABI® style
- Semi-skirted
- Volume 0.2 ml
- Upstand

***Cat. No.: FG-200250 (50 plates)***

FastGene® Fast 96-well Plate
- Semi-skirted
- Volume 0.1 ml
- For ABI 7500 FAST

***Cat. No.: FG-03890 (25 plates)***

FastGene® White 96-well Plate Roche® style
- Semi-skirted
- Volume 0.2 ml
- For LightCycler™

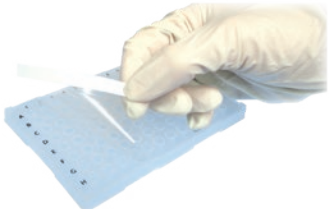
***Cat. No.: FG-210250 (50 plates)***

FastGene® 384-well Plate
FastGene® Silicon sealing mat (hard or soft)
- Full-skirted
- Volume 50 µl
- For ABI 7500 FAST

***Cat. No.: FG-300150 ( 50 Plates)***
***Cat. No.: FG-3110MH (10 Mats hard)***
***Cat. No.: FG-3110MS (10 Mats soft)***

# FastGene™ PCR adhesive seal

- 138 x 79 mm (with edge), 118 x 79 mm (without edge)
- Suitable for Real-Time PCR applications
- Suitable for PE, PS and PP plates
- Highest quality prevents evaporation during PCR or storage
- Peelable without sticky residue after the seal is peeled off
- End tabs for easy removal
- Resistant to DMSO
- Can be used at temperatures from -80 °C to +120 °C



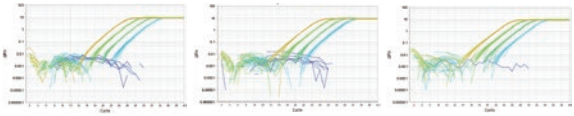
*Cat. No.: FG-93AC (100 sheets)*

## FastGene® PCR adhesive clear seal (FG-93AC)

**Purpose:**
Test whether FastGene® PCR adhesive clear seal (FG-93AC) is suitable for real-time PCR. Test was carried out in comparison with the commercially available competitor Fs qPCR pressure clear seal.

**Evaluation of amplification curves**

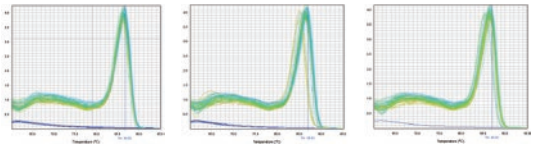
1. FastGene® PCR adhesive clear seal (FG-93AC)
2. Pressure clear seal
3. Competitor Fs pressure clear seal



- The qPCR amplification curves are in the same range for all three seals. No significant difference could be observed between the seals. The comparison of the CT and CT SD shows very similar values for all three seals.

**Evaluation of the melting curve**

1. FastGene® PCR adhesive clear seal (FG-93AC)
2. Pressure clear seal
3. Competitor Fs pressure clear seal



- The results for the melting curve are almost the same

**Results/Conclusion:**
According to the results, FastGene® PCR adhesive clear seal (FG-93AC) showed similar performance compared to the other two qPCR pressure seals. The seal can therefore be used without restrictions in our qPCR experiments.

# FastGene™ 1.5 ml Reaction Tube

- Frosted lid and frosted side writing surface
- Graduations every 100 µl
- Thumb-friendly beveled lip, easy to open and close
- Autoclavable when open
- Compatible with all common micro centrifuges

*Cat. No.: FG-015 (500 Units)*

# Free Sample?

You want to test our PCR plastic? No problem! Just give us a call or write us an email and get your free sample very soon.

+49 2421 554960
info@nippongenetics.de
**www.nippongenetics.eu**

# FastGene™ Cryo Tubes

- **Cryopreservation of cells and tissues**
- **Temperature resistant: -196°C to +121°C**
- **Separate and unremovable 2-D barcode**
- **Wide opening for easy tissue storage**

## Cell and tissue cryopreservation

The FastGene® Cryo Tubes are the optimal solution for a safe and long storage of cryopreserved samples. Three different sizes with 0.5 ml, 1 ml and 2 ml volume, the choice of an external or internal lid and the possibility of introducing a FastGene® 2-D barcode offer the right tube for every demand. The FastGene® 2-D barcode inserts are separately available and once attached to the tube they are so firmly embedded that they can´t be lost. The Cryo Tubes are designed self-standing and with an extra protection against leakage.

## Automation friendly by using SBS format

The FastGene® Cryo Racks were designed to be automation friendly. This is ensured by using a SBS format, which is widely used in an automated environment. Additionally, the racks have holes in the bottom. Hence, the tubes do not have to be removed to be scanned.

The FastGene® Cryo Tubes were designed to accomodate different volumes. The large tubes are able to store 2 ml, while the smaller tubes can handle a volume of 1 ml or 0.5 ml. All FastGene® Cryo Tubes have a perfect inlay that enables FastGene® 2-D barcode insert to be introduced.

The FastGene® Cryo Racks are SBS format compatible.

# FastGene™ Cryo Tubes

## Cryo Tubes with external lid

0.5 ml Cryo Tubes with external lid
500 tubes (20 bags of 25 tubes)
***Cat. No.: FG-CRY-05S***

1.0 ml Cryo Tubes with external lid
500 tubes (20 bags of 25 tubes)
***Cat. No.: FG-CRY-10S***

2.0 ml Cryo Tubes with external lid
500 tubes (20 bags of 25 tubes)
***Cat. No.: FG-CRY-20S***

## Cryo Tubes with internal lid

0.5 ml Cryo Tubes with internal lid
500 tubes (20 bags of 25 tubes)
***Cat. No.: FG-CRY-In-05S***

1.0 ml Cryo Tubes with internal lid
500 tubes (20 bags of 25 tubes)
***Cat. No.: FG-CRY-In-10S***

2.0 ml Cryo Tubes with internal lid
500 tubes (20 bags of 25 tubes)
***Cat. No.: FG-CRY-In-20S***

## Cryo Racks

Cryo Tube Racks in SBS format
for 0.5 ml (10 racks, 40 tubes per rack)
***Cat. No.: FG-CRY-05RC***

Cryo Tube Racks in SBS format
for 1.0 ml (10 racks, 40 tubes per rack)
***Cat. No.: FG-CRY-10RC***

Cryo Tube Racks in SBS format
for 2.0 ml (10 racks, 40 tubes per rack)
***Cat. No.: FG-CRY-20RC***

2-D Inserts
500 pcs.
***Cat. No.: FG-CRY-2D***

# FastGene™ Screw Cap Tubes

- **Small packaging units prevent contamination**
- **Temperature resistant: -80 °C to +121°C**
- **Separate and unremovable 2-D barcode**

## Screw Cap Tubes for cell storage

The storage of prokaryotic and eukaryotic cells enables the researcher to perform experiments over a larger time period as well as save cells that delivered experimental success. The FastGene® Screw Cap Tubes were developed to tolerate very low and very high temeperatures.

## Perfect design - Japanese precision

The FastGene® Screw Cap Tubes were designed to accomodate different volumes. The large tubes are able to store 2 ml, while the small tubes can handle a volume of 0.5 ml. Both versions of the FastGene® Cell Storage Tubes have a perfect convex inlay that enables FastGene® 2-D barcode insert to be introduced.

The FastGene® Screw Cap Tubes are available in 5 different cap colours and 2 different volumes. The 2-D barcodes enable a perfect tracking of stored tubes.

# FastGene™ Screw Cap Tubes

## DNA adsorption test

**Purpose:**
FastGene® Screw Cap Tubes (0.5 ml) were tested for their DNA adsorption over the cryopreservation.

**Method:**
Measurement of DNA concentration in FastGene® Screw Cap Tubes before and after cryopreservation.

1: Human genomic DNA was 20-fold diluted in order to create a 250 µl solution with a concentration of 5.0 ng/µl.
2: Each time 50 µl of this DNA were dispensed to 0.5 ml Screw Cap Tubes. As result, 5 mother tubes were created.
3: For the measurement of DNA concentration in the mother tubes after dispensing, a Qubit® was used.
4: 10 µl from each mother tube were dispensed to three daughter tubes.
5: After dispensing the daughter tubes were stored for 24 h at 4°C.
6: The concentration of each daughter tube (5 x 3 daughter tubes = 15 tubes) was measured with Qubit®.
7: The mother tubes´ DNA concentration was determined as 100%.

| DNA conc. mother tube [ng/µl] | DNA conc. daughter tube [ng/µl] | DNA conc. changing [%] |
|---|---|---|
| 5.08 | 5.18 | |
| | 5.22 | 101.84 |
| | 5.12 | |

**Results/Conclusion:**
The DNA concentration in the FastGene® 0.5 ml Screw Cap Tubes shows little or no change, so that the tubes could be used without problems for DNA experiments.

## Ordering information

| Cat. No. | Cap Colour | Product | Content |
|---|---|---|---|
| FG-SCT05N | | 0.5 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT05B | | 0.5 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT05R | | 0.5 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT05G | | 0.5 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT05Y | | 0.5 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT20N | | 2 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT20B | | 2 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT20R | | 2 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT20G | | 2 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-SCT20Y | | 2 ml FastGene® Screw Cap Tubes | 500 tubes (20 bags of 25 tubes) |
| FG-2DI | --- | 2-D Inserts | 500 pcs. |
| FG-SCR10 | --- | Tube Racks | 10 Racks for 48 tubes |

The FastGene® Screw Cap Tubes come in small packaging units (25 tubes per bag) to prevent contaminations.

The FastGene® Tube Racks are SBS format compatible.


# LAB INSTRUMENTS


## CONTENT

# Product Highlight

## FastGene™ Ultra Cycler

*Efficient, intuitive, smart*


- Very fast ramp rates for a quick PCR
- 96-well PCR instrument with a gradient
- Touchscreen with a very easy-to-use software
- Compatible with most PCR tubes and 96-well microplates

### It's simple - Affordable gradient PCR

A thermal gradient of up to 24°C can be precisely generated so that the temperature of each well is repeatable cycle-to-cycle. Sporting a fully adjustable heated lid, the FastGene® Ultra Cycler is compatible with a wide range of 0.2 ml PCR tubes (standard and low profile) and 96-well PCR microplates (fully-, semi-, and non-skirted). With a gorgeous touchscreen interface and simple programming, this system is easy-to-use. Small and robust, the FastGene® Ultra Cycler can carve out a niche in any lab environment by providing years of reliable amplification!

Check it out on YouTube

# FastGene™ Ultra Cycler

*Efficient, intuitive, smart*

| SPECIFICATION | | |
|---|---|---|
| Gradient | ✔ | 24°C over the whole block width |
| High temperature range, accuracy and resolution | ✔ | Temperature range: 4°C - 99°C \| Temperature accuracy: ± 0.25°C<br>Temperature resolution: 0.1°C increments |
| Very fast ramp rates | ✔ | Heating rate: 7°C / per second<br>Cooling rate: 5°C / per second |
| Compatible | ✔ | 0.2 ml tubes or strip tubes with flat or domed caps<br>96- well high or low skirted plates with strip caps, adhesive seal |
| Condensation control | ✔ | Automatic utilising applied pressure heated lid |
| Heated lid | ✔ | Heated lid with a temperature range of 60 °C - 115°C |
| Compact design | ✔ | Dimensions: 180 x 285 x 190 mm (W x D x H)<br>Weight: 5.5 kg |
| Integrated power supply | ✔ | 100-240V, 4 A (50/60 Hz) automatic voltage sense, standard IEC Inlet plug |
| Huge touchscreen | ✔ | 7-inch widescreen colour touch display |

**Customer Testimonial**

*"We own a Nippon FastGene® Ultra Cycler since December 2017. The Cycler is used every day. So far, the device works very reliable. It is relatively small, very quiet and has very short run times, because of fast heating and fast cooling of the samples. The handling and programming of the cycler is very simple with a clear menu navigation. Everyone can save own programs with a personal avatar"*

**Researcher**
Institute of Molecular Botany,
University Ulm, Germany

★★★★★

## Ordering information

| Cat. No. | Product |
|---|---|
| FG-TC01 | Gradient UltraCycler PCR Thermocycler with touchscreen |

# FastGene™ Ultra Cycler

## The gradient advantage

The gradient function allows you to optimise your reactions. Discover the best annealing temperature over a range of 24°C. The block system is designed for the use of 96 individual PCR tubes (0.2 ml), 12 PCR 8-well strips (0.2 ml) or 96-well PCR plates (0.2 ml). The UltraCycler combines the latest electronics and peltier technology with unusually high operating comfort.

## Quickstart with Albert

Enables the user to configure easy to moderate complexity profiles in just moments. Every step from a routine PCR is available (even a 1-Step RT-PCR can be performed).

## Touchscreen graphical user interface

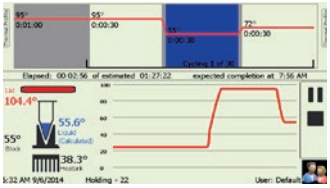
A high performance graphical processor with a large 7 inch, vivid colour touchscreen display allows for an easy run setup and monitoring. The powerful yet intuitive software makes creation of even the most complex of thermal profiles a breeze.

## Heated lid evaporation control

The UltraCycler employs an applied pressure heated lid design to keep the air contained within the tube hotter than the reaction volume. This causes any evaporation to condense back into the cooler reaction liquid, thereby eliminating the need for an oil or wax condensation overlay.

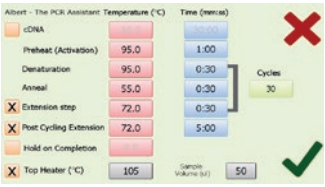
## USB connectivity

A front USB port allows for fast, easy file transfer to a USB memory stick enabling the sharing of thermal profiles between instruments and users. The use of a USB mouse is also supported.



**Watch your PCR**
The software allows you to watch all steps during the PCR cycle with precise temperature information.

**Exact temperatures**
The temperature gradient selected with Albert PCR assistant is used to calculate the exact temperature in each lane. Hence, a better determination of the optimal temperature is possible.




**Genious configuration**
The Albert PCR assistant enables the user to configure easy to moderate complexity profiles in just moments. All the thermal steps which occur in a typical profile are included and the parameters may be adjusted in just a few clicks.


**The user accounts section**
Allows up to 99 user profiles each with dedicated file storage directory and personalized Icon. When a user is selected, thermal profiles will be loaded or saved to a directory specific to that user providing easy recovery later.

## Ordering information

| Cat. No. | Product |
|---|---|
| FG-TC01 | Gradient UltraCycler PCR Thermocycler with Touchscreen |


# Talk to the experts and enjoy a free product demonstration

Finding the perfect Thermal Cycler can be difficult. We can help you! Just arrange an appointment with us and enjoy a product demonstration.

+49 2421 554960
info@nippongenetics.de

**www.nippongenetics.eu**

# FastGene™ Mini Centrifuge


- **Four different colours with a compact design**
- **Supplied with standard microtube, slide and strip tube rotor**
- **Ideal for quick spin down and microfiltration**

## The ideal lab companion

The FastGene® Mini Centrifuges come in four different colours and are supplied with three rotors. The first rotor is designed to centrifuge up to six individual 1.5 ml plastic micro centrifuge tubes. It will also accept 0.5 ml tubes and 0.2 ml tubes with the adapters supplied with the unit. The second rotor can load two 8-well strips (tube capacity 0.2 ml). The rotors are designed for applications requiring relatively low g-forces, such as microfiltration, cell separation and quick spin downs from the walls of tubes.

The FastGene® Mini Centrifuge adaptors and rotors.

The rotors of the Mini Centrifuges can be easily replaced.

# FastGene™ Mini Centrifuge

FastGene® Mini Centrifuge in Pink

FastGene® Mini Centrifuge in Blue

FastGene® Mini Centrifuge in Green

FastGene® Mini Centrifuge in Red

| SPECIFICATION | | |
|---|---|---|
| Four different colours | ✔ | Pink, Blue, Green and Red |
| Three different rotors included | ✔ | Standard angle rotor for 6x 1.5/2.0 ml tubes \| Slide rotor<br>0.2 ml strip tube rotor |
| Adaptors included | ✔ | 6x adaptors for 0.5 ml tubes<br>6x adaptors for 0.2 ml tubes |
| High speed | ✔ | Centrifugal force: 2,000 x g<br>Speed: 6000 rpm |
| Compact design | ✔ | Dimensions: 175 x 148 x 118 mm |
| Integrated power supply | ✔ | 100-240 V ~ 0.5 A |

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| NG002P | FastGene® Mini Centrifuge (Pink) | Pink Mini Centrifuge \| 3 rotors \| 6 adaptors for 0.2 ml and 0.5 ml tubes |
| NG002B | FastGene® Mini Centrifuge (Blue) | Blue Mini Centrifuge \| 3 rotors \| 6 adaptors for 0.2 ml and 0.5 ml tubes |
| NG002G | FastGene® Mini Centrifuge (Green) | Green Mini Centrifuge \| 3 rotors \| 6 adaptors for 0.2 ml and 0.5 ml tubes |
| NG002R | FastGene® Mini Centrifuge (Red) | Red Mini Centrifuge \| 3 rotors \| 6 adaptors for 0.2 ml and 0.5 ml tubes |

# FastGene™ Plate Centrifuge

- **Plate Centrifuge with two plate carriers**
- **Convenient, silent and easy-to-use**
- **Spinning down liquids in 96- and 384-well plates**

## No more carry-over contamination

Centrifuging 96- and 384-well plates can be surprisingly tricky if your lab is performing high-throughput assays for applications such as PCR, qPCR, or ELISA. This is particularly true for NGS work with minimal reaction volumes. It is a priority to have the entire reaction volume present in the bottom of the wells and to eliminate the chance of cross-contamination with other wells. Droplets or condensation on the sides of the wells, for example, can cause assay on failure due to inadequate volumes or separation of reaction components from the reaction mixture. Worse yet, liquid forced out of wells during centrifugation and into other wells causes an immediate contamination issue. A reliable and properly-designed plate-centrifugation should therefore be a part of every GLP-protocol.

The FastGene® Plate Centrifuge was designed with these issues in mind. It is loaded at a 70° angle, and when it spins the plates, it achieves a perfect 90° angle. These unique spinning parameters keep the liquid in each well far away from the seal without a chance to contaminate other wells. The pellets are firmly placed dead-center at the bottom of each well. This precise pellet placement is ideal for sensitive NGS applications so that liquid handling tips can be adjusted to not perturb the pellet.

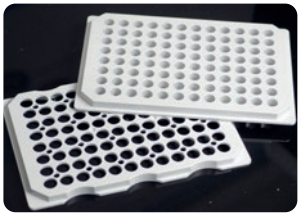
## Centrifugation was never more silent

Considerably reduce the noise level in your lab: With an extra silent rotation motor, the FastGene® Plate Centrifuge is the perfect centrifuge for areas of concentrated work. No more disturbing centrifugation noises.

# FastGene™ Plate Centrifuge

## Convenient and versatile

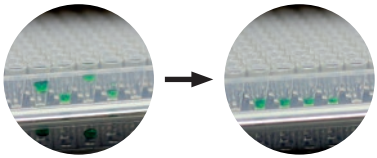
The FastGene® Plate Centrifuge is very versatile: It comes with 2 plate adapters, making it compatible with all types of 96-well plates such as full-skirted, half-skirted or even non-skirted plates. These adapters can also be used for individual reaction tubes and for 8-well strips, making it the perfect centrifuge for spinning down liquids in life science laboratories. Even 384-well plates (full-skirted) are no problem for the plate centrifuge.



Adapter plates for semi- and non-skirted 96-well plates as well as single reaction tubes or 8-tube strips.

## Easy and safe to use

The timer function gives you the freedom to perform multiple tasks while the centrifuge is running. By setting the time (up to 10 minutes) on the illuminated display, you can get more reproducible results, compared to the simple plate centrifuges equipped with an open/close function only. After centrifugation, a signal is given and the centrifuge is safe to open. The rotors of the centrifuge are easily removable, enabling complete cleaning of the internal area of the centrifuge.



Before and after centrifugation of a full-skirted 384-well plate.

## Alternative for high-speed plate centrifuges

The FastGene® Plate Centrifuge was designed for quick and gentle centrifugations of plates. Its compact footprint, easy handling and affordable price makes it the perfect alternative to more complex and expensive high-speed plate centrifuges.

## Easy to clean

Spilling biological material can be a major source of infection. The rotors of the centrifuge are easily removable, enabling complete cleaning of the internal area of the centrifuge.

| SPECIFICATION | | |
|---|---|---|
| Compatible for many well plates | ✔ | 96-well plates (full-skirted, semi-skirted and non-skirted)<br>384-well plates (full-skirted) |
| High speed | ✔ | Centrifugal force: 480 x g<br>Speed: 2200 rpm |
| Compact size | ✔ | Dimensions: 290 x 360 x 140 mm (W x D x H)<br>Weight: 1.3 kg |
| Adapter plates included | ✔ | Adapter plate for semi-and non-skirted 96-well plates<br>Adapter plate for single reaction tubes or 8-tube strips |
| Integrated power supply | ✔ | 200-240 V, 50-60 Hz<br>Additional version with 110 V, 50-60 Hz is also available |

## Ordering Information

| Cat. No. | Product | Content |
|---|---|---|
| NG040 | FastGene® Plate Centrifuge | Plate Centrifuge, 4 x Adapters (200-240 V) |
| NG040US | FastGene® Plate Centrifuge (US version) | Plate Centrifuge, 4 x Adapters (110 V) |

# FastGene™ High Speed Mini Centrifuge

## Fast and silent

The FastGene® High Speed Mini Centrifuge comes with a microrotor with a capacity of 12 tubes and can centrifuge up to 12,300 x g respectively 13,500 rpm. The centrifuge shows a very compact design. After centrifugation, the door will be released automatically. The high quality of the centrifuge is supported by the fact that all mechanical parts are made of strong steel components. The air flow system guarantees that the noise during centrifugation is very low. The included rotor is autoclavable and a rotor for 8-well PCR strips is also available separately.

The standard rotor of the FastGene® High Speed Mini Centrifuge can load 12x 2 ml or 1.5 ml tubes. The optional PCR rotor (Cat.No.: NG004) is suitable for 0.2 ml single tubes or 4x 8-well strips.

| SPECIFICATION | | | |
|---|---|---|---|
| High speed | ✔ | **Standard rotor** Centrifugal force: 12,300 x g<br>Speed: 13,500 rpm | **PCR strip rotor** Centrifugal force: 1,850 x g<br>Speed: 6,000 rpm |
| High capacity | ✔ | **Standard rotor** 12x 2 ml or 1.5 ml tubes | **PCR strip rotor** 4 x 8well PCR strips |
| Time control | ✔ | Pulse or timed ≤ 30 min<br>Blue LCD display | |
| RPM/RCF conversion | ✔ | Easy conversion to RPM/RCF | |
| Very silent | ✔ | Less than <56 dB | |
| Compact size | ✔ | Dimensions: 208 x 245 x 145 mm (W x D x H)<br>Weight: 4.4 kg | |
| Integrated power supply | ✔ | 220V, 50-60 Hz | |

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| NG003 | FastGene® High Speed Mini Centrifuge | Centrifuge comes with the standard rotor |
| NG004 | PCR rotor | Optional rotor for 0.2 ml single tubes or 4x 8-well strips |

# FastGene™ Vortexer Mini

## Compact with a high performance

The FastGene® Vortexer Mini is suitable for mixing of samples in single tubes, falcon tubes and beakers. The adjustable rotational speed of 0-4000 rpm enables a very gentle until vigorous shaking. The stability is ensured by a heavy base thus the vortexer does not dance. This avoids a slippage of the sample tube.

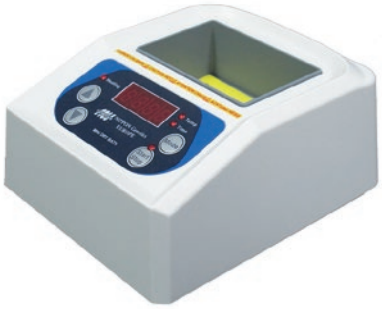
## Specification

| Parameter | Vortexer Mini |
|---|---|
| *Construction material* | Chemical resistant plastic |
| *Support system* | Heavy base |
| *Operational mode* | Touch |
| *Speed setting* | Analogue |
| *Speed* | 0 - 4000 rpm |

## Ordering information

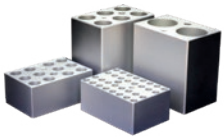
| Cat. No. | Product | Content |
|---|---|---|
| VX2 | FastGene® Vortexer Mini | Main Unit |

# FastGene™ Mini Dry Bath



## Take a bath with your tubes

The FastGene® Mini Dry Bath shows a very compact design but it is powerful to fit all incubating needs. Using the different block designs, you can use PCR strips and/or single tubes from small PCR tubes like 0.2 ml up to 50 ml culture tubes. Alternatively, the molded PTFE coated chamber allows you to use it as a water bath. The interchangeable ability of the heating block brings you the convenience of a traditional dry bath.



Metal blocks for the FastGene® Mini Dry Bath.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| NG020 | FastGene® Mini Dry Bath | Main Unit |
| NG025 | Metal Block | For 0.2 ml reaction tubes |
| NG026 | Metal Block | For 1.5 ml reaction tubes |
| NG027 | Metal Block | For 15 ml reaction tubes |
| NG028 | Metal Block | For 50 ml reaction tubes |
| NG029 | Metal Block | For 0.5 ml reaction tubes |
| NG031 | Metal Block | For 1.5 or 2 ml reaction tubes |
| NG034 | Car Adapter | 1 Car Adapter for the FastGene® Mini Dry Bath |

# Mixy Professional Tissue Grinder

- **Grinder for resuspending pellets and disrupting tissue**
- **Simply to use and cordless**
- **Homogenization of animal tissue, bones, plant tissue and food**

## Mixy homogenizes almost everything

The Tissue Grinder Mixy Professional is a motor-driven grinder for resuspending pellets or disrupting soft tissue in microcentrifuge tubes. The motor is powered by a 3.7 V battery and can be used cordlessly for up to 4 hrs.

**The easiest way for the homogenisation of tissue**

## Simple to use

Take the grinder out. Place the pestle on the pestle adapter. Insert the pestle into the microcentrifuge tube, and use the button to start mixing. Release the button after the mixing operation is completed.

## Specification

| Parameter | Mixy Professional |
|---|---|
| *Speed:* | 12,000 rpm |
| *Successfully homogenized tissues* | Animal, bacteria, plants (root and leaf) and bones |
| *Life time of the rechargeable battery* | 4 hours |
| *Dimension:* | 155 mm x 25 mm |
| *Weight:* | 0.2 kg |

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| NG010 | Mixy Professional | Tissue Grinder with lithium battery and 10 plastic pestles |
| NG011 | Metal Pestle | Autoclavable steel pestle |
| NG006 | Plastic Pestles | 100 disposable plastic pestles 1.5 $cm^3$ |

**Application Note**
2017 <01e>

## Application — Improving RNA extraction from arterial tissue

| | |
|---|---|
| Product | Mixy Professional Tissue Grinder (NG010) |
| Manufacturer | NIPPON Genetics EUROPE |

The following data is kindly provided by Daniel Schick, University Medical Centre in Aachen, Germany.

### Background

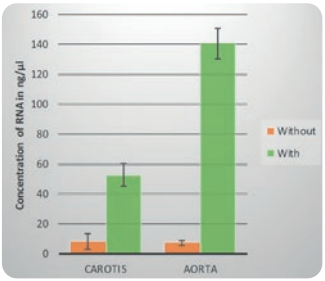
Isolation of RNA from arterial tissue is difficult. Disrupting the tissue before starting the isolation of the nucleic acid can enhance the RNA yield. Here, we present the isolation of RNA performed with and without the use of the homogenizer Mixy Professional. The RNA was used to analyse the expression of metalloproteins in cardiovascular diseases.

### Experimental Condition

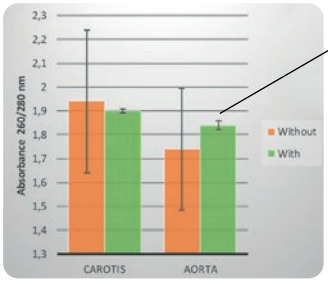
- Type and amount of tissue: Aorta (30 µg) and carotis (5 µg) isolated from mice (1 - 12 months old, stored at -80 °C)
- Condition of tissue: Intact tissue morphology
- **Methods:**
  1. Homogenizing the tissue in lysis buffer using the Mixy Professional Tissue Grinder
  2. Incubation with Proteinase K
  3. Column based mRNA isolation
  4. Spectrometric determination of concentration and quality
  5. RNA quality determination using agarose gel electrophoresis
  6. Reverse transcription
  7. Quantification (relative) of gene expression using qPCR assays

### Results

**Concentration of RNA**




**Quality of RNA**

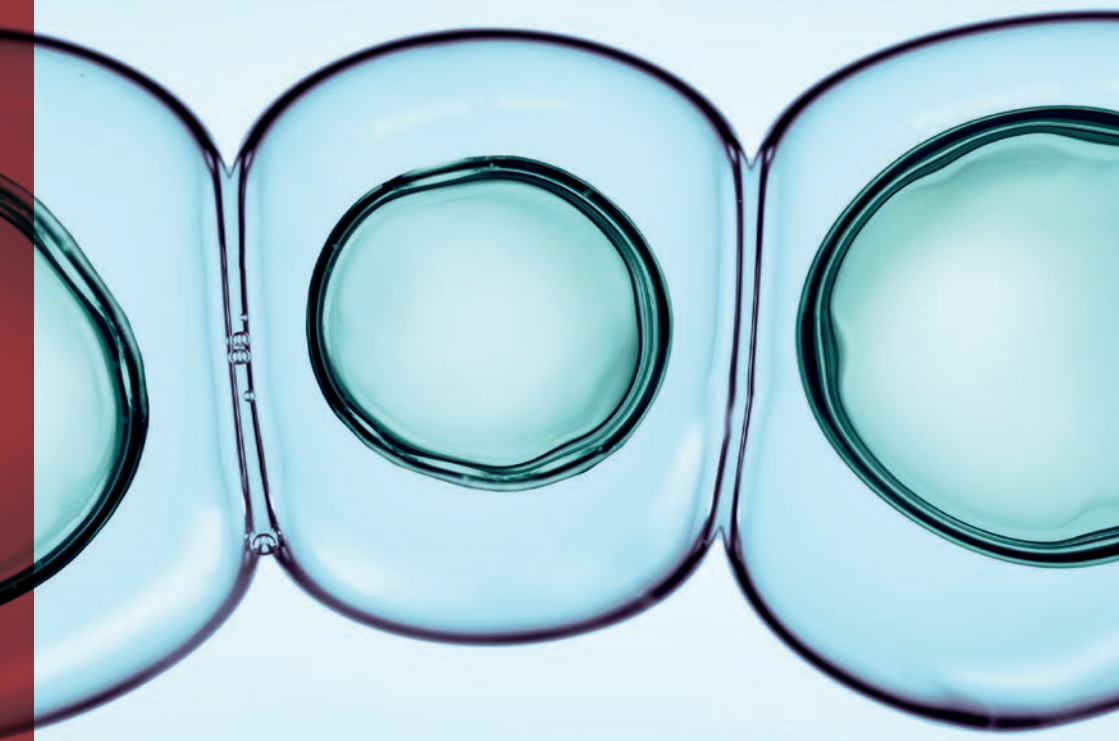



Using the Mixy Professional Tissue Grinder reduces the variability of the RNA quality immensely.

**Customers comment**

**Daniel Schick:**

The RNA yield was extensively increased by 6 - 20 fold when using the Mixy Professional Tissue Grinder. Additionally, the quality of the RNA measured spectrometrically showed considerably less variation when using the Grinder (absorbance at 260/280 nm is 1.94 ± 0.30 without vs 1.90 ± 0.01 with the Mixy Grinder Professional).



# CELL BIOLOGY

## CONTENT

# Product Highlight

StemFit

*Recommended by leading Scientist*

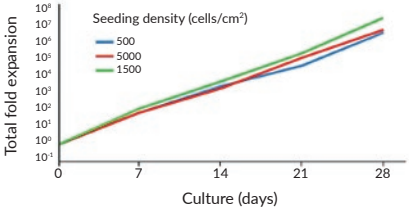

- **Recommended by the nobel prize winner Shin'ya Yamanaka**
- **Enables single cell cloning**
- **Feeder-free and Xeno-free**
- **Less media volume needed**
- **Reproducible and fast replication rates**

## No feeder cells and xeno-free culture medium

StemFit® medium was developed to produce a reliable and well-defined growth condition for human stem cells. It has all of the necessary components for the culture of embryonic stem cells (ES) as well as induced pluripotent stem cells (iPS), and contains only xeno-free components - nothing from other animal sources. StemFit® also eliminates the need for feeder cells. These important benefits lead to a reduction of variation in growth, and reduces concerns for contamination in the cultivation of stem cells.

## Very reproducible growth rates

The cultivation of stem cells using StemFit® results in a very reproducible growth rate. This enables a perfect planning of experiments. No more variation due to different starting conditions caused by the natural variation when culturing on feeder cells. Analysing the morphology of stem cells cultivated in StemFit® shows that the colony shape and size are very similar to the cells grown on feeder cells.



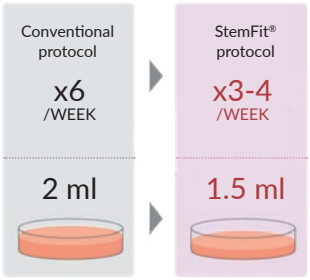

Human 201B7 iPSCs were cultured on iMatrix-511 with StemFit® for 4 weeks without weekend feeding.

StemFit

*Recommended by leading Scientist*


## Less media needed

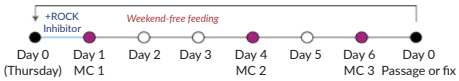
Due to the high-quality components and the ideal concentration of nutrients, the volume of StemFit® required per plate is lower than that of conventional media, and even lower than that of other feeder-free media. For each well of a six-well plate you need just 1.5 ml, instead of 2 ml. A further 50% reduction in media consumption is the direct result of far fewer feeding steps during the week. This means that you are saving in reagents, time, and money.




The volume of StemFit® can be reduced by 25% per well. The reduced amount of media changes leads to a further volume reduction of more than 50%.

## Free up your weekends

The maintenance of stem cells is very complicated and labor-intensive. Worst of all is the tedium of a feeding step during the weekends! StemFit® allows a weekend devoid of stem cell media changes. The recommended weekly workflow shown below gives you more time with friends, family, and sure... for doing more experiments.



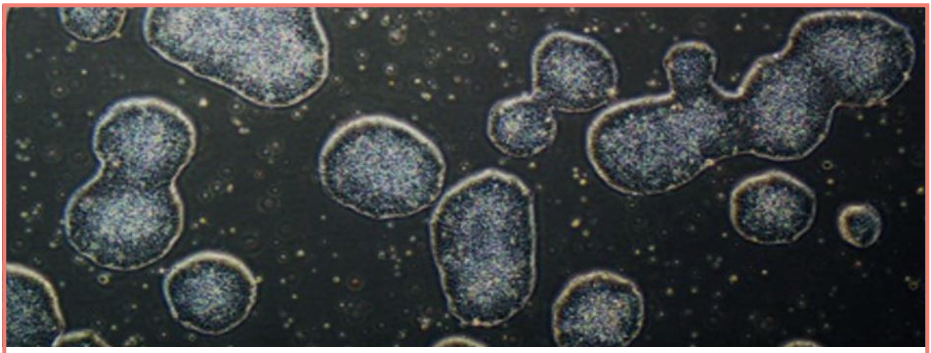

Weekend-free workflow with StemFit®. (Black circle = cell passage; Pink circle = media change (MC); white circle = maintenance-free day).

**Let StemFit feed your cells while you enjoy your weekend!**

## Combined medium during the whole process

StemFit® contains no bFGF, so you can choose the best bFGF concentration for your needs. Therefore, you can use the same medium for reprogramming, maintenance and differentiation.

StemFit

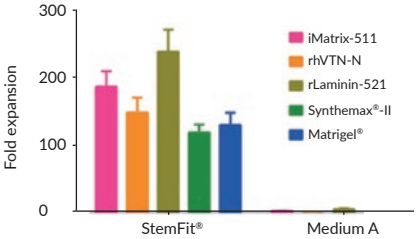


# Recommended by the nobel prize winner Shin'ya Yamanaka

"StemFit, a newly developed Xf-medium, was the best medium for hESC and hiPSC culture with rLN511E8"

## Superior growth performance on any matrices

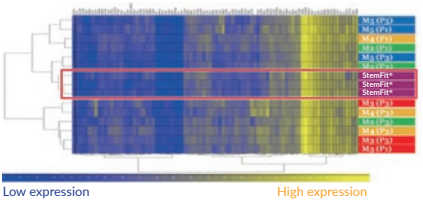
StemFit® has been tested on many different matrices. As can be seen below, the fold expansion rate of cells cultured in StemFit® is much higher when compared to Medium A from the market leading competitor.




Fold expansion of human 201B7 iPS-cells, transitioned to feeder-free conditions with StemFit® or commercially available medium A. Cells were cultered for one week.

## Consistent gene expression profile

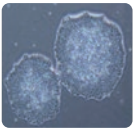
The cultivation of stem cells is very stressful for the cells. Every passage and growth period could therefore introduce unwanted changes in the genome expression profile. Hence, the CGI Catapult Institute in London investigated the genomic profile of StemFit® after 1 passage, 3 and 5 passages and compared it to 4 commercially available media. The most consistent gene expression was obtained using StemFit®.




The expression profile using the TaqMan ScoreCard™ assay (n=3) showed that the most consistent gene expression of after 5 passages was obtained using StemFit®.

## Start from a single cell

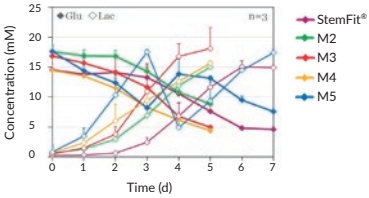
StemFit® enables a superior colony forming efficiency from a single cell clone, which minimizes the effects of stress and results in reliable cells for downstream applications. Furthermore, with StemFit® you can easily determine the efficiency of your cell production and duplicate individual clones.



Human embryonic stem cells were dissociated into single cells and cultered with StemFit®. Cells show a normal cell morphology.

## Less production of lactate

The production of lactate is the result of hypoxic stress. The consequences can be changes in the genome expression profile or lead to unwanted differentiation of the stem cells. The CGI Catapult Institute in London showed that there is considerably less lactate production when the cells are grown in StemFit® (pink line with white circles).





## Free of FGF

StemFit® contains no fibroblast growth factor (FGF). So, you can easily choose your preferred concentration of FGF for your cells. Just use the same media for differentiation, reprogramming and maintenance. It's that simple.

**StemFit Basic02**

**StemFit Basic03**

**StemFit Basic04**

| | | | |
|---|---|---|---|
| Single-cell culture | ✔ | ✔ | ✔ |
| Xeno-free | ✔ | ✔ | ✔ |
| Animal-origin free | - | ✔ | ✔ |
| Clinical research | - | ✔ | ✔ |
| cGMP | - | cGMP | in preparation |
| Number of bottles | 2 | 2 | 1 |

## Reference in Literature


- **Nakagawa, M.** *et al.* (2014). A novel efficient feeder-free culture system for the derivation of human induced pluripotent stem cells. *Sci. Rep.*, 4, 3594.
- **Desai N.** *et al.* (2015). Human embryonic stem cell cultivation: historical perspective and evolution of xeno-free culture systems. *Reprod Biol Endocrinol.*, 13:9.
- **Morizane, R. and Bonventre, J.** (2017). Generation of nephron progenitor cells and kidney organoids from human pluripotent stem cells. *Nature Protocols*, 12 No.1.
- many others...


## Ordering Information

| Cat. No. | Product | Content |
|---|---|---|
| Basic02 | StemFit® Medium (Research grade) | 500 ml (400 ml Liquid A, 100 ml Liquid B) |
| Basic03 | StemFit® Medium (Clinical grade) | 500 ml (400 ml Liquid A, 100 ml Liquid B) |
| Basic04 | StemFit® Medium (Clinical grade) | 500 ml (one bottle composition) |

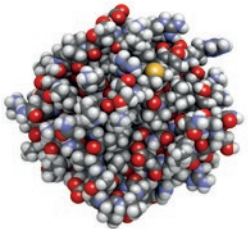
# Recombinant human bFGF


## Take care of your stem cells

Basic fibroblast growth factor (bFGF) is a prototypic member of the fibroblast growth factor family. Proteins of this family play a central role during prenatal development, postnatal growth and regeneration of a variety of tissues, by promoting cellular proliferation and differentiation.

bFGF is a critical component for maintaining embryonic stem cells and iPS cells in culture in an undifferentiated state. Human bFGF from Ajinomoto is a bioactive protein intended for use in cell culture applications.

- Manufactured under cGMP compliant facility
- Animal-origin free
- Great performance with StemFit®
- High purity and activity
- High batch homogeneity



Molecular structure of the basic fibroblast growth factor

| Cat. No. | Product | Content |
|---|---|---|
| bFGF-1mg | Basic Fibroblast Growth Factor (bFGF). | 1 mg |

# Activin A

## Differentiate stem cells into endoderm or mesoderm cells

Activin A is a member of the TGF-beta superfamily of cytokines and is involved in a wide range of biological processes including tissue morphogenesis and repair, fibrosis, inflammation, neural development, hematopoiesis, reproductive system function, and carcinogenesis. Human Activin A is a 26.0 kDa disulfide-linked homodimer of two βA chains, each containing 116 amino acid residues.

Activin A is mainly used for stem cell cultivation in order to differentiate the stem cells into endoderm or mesoderm.

**The perfect combination with StemFit®**

### Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| BasicAA10 | Recombinant human Activin A (0.1 mg/ml) | 100 µl, 10 µg |
| BasicAA50 | Recombinant human Activin A (0.1 mg/ml) | 500 µl, 50 µg |

# Stem cell therapy moves towards the clinic

Stem cell research is leading to potential new therapies to treat disease, with several applications in clinical trails or expected to enter trials in the coming months. These new discoveries are transforming how we think about the future of medicine.

Due to its high potential, the global regenerative medicine market is likely to expand considerably in the coming years. According to a report published by Fortune Business Insights, titled “Regenerative Medicine: Global Market Analysis, Insights and Forecast, 2019-2026,” the market was valued at US$ 23,841.5 Mn in 2018. Fortune Business Insights states that the market will reach US$ 151,949.5 Mn by the end of 2026.

# Bambanker™


- **Higher survival rate**
- **No programmed or sequential freezing required**
- **Serum-free - no risk of contamination**
- **Usable for all known cell lines**

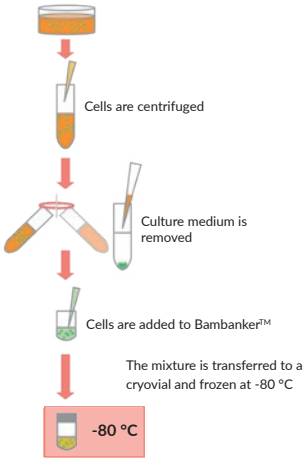
## Long-term storage of cultured cells

Cryopreservation of mammalian cells is extremely valuable and common in biological research. Fear of losing a cell line to contamination or incubator failure is frequently the impetus for making archival storage of cells a high priority after receiving or generating a new cell line. Once transferred from growth media to freezing medium, the cells are usually frozen at a controlled rate and stored in liquid nitrogen vapor or at -130 °C in a mechanical deep freeze. Although freezing a cell line is a commonly performed procedure, problems arise when suitable freezers are not available, or unwanted variables are introduced by the presence of serum, extra-wash or complicated freezing algorithms.

## Save time while saving your cells

The cell freezing media Bambanker™ permit cryopreservation of cells at -80 °C (or in liquid nitrogen), obviating the need for an additional and expensive ultra-low freezer and avoiding time consuming and complicated controlled freezing protocols. Simply 1) harvest cells, 2) aspirate medium, 3) resuspend in Bambanker™, 4) transfer to a cryovial and 5) store at -80 °C. No programmed or sequential freezing is required! Bambanker™ is a serum-free cryopreservation medium that is delivered ready-to-use and can be kept in the refrigerator for up to two years. Convenient 20 ml bottles are available, making Bambanker™ freezing medium ideal for use by individual members of your lab.

**Ready-to-use medium for preservation of cells**



# Bambanker™

## Higher number of intact cells after thawing

How much are your cells worth? Bambamker™ freezing medium offers the unique combination of simplicity and high survivability. The results are simply miraculous. This product has been used extensively in Asia, where it was first developed, with a broad range of cell types. Recovery rates, even of sensitive cells, are much higher compared to regular cell freezing media. The vast majority of cell types show survivability greater than 50% with many approaching 90% or more. Important cell lines like hybridomas can have as high as 100% recovery after long-term storage. Even hematopoietic stem cells pose no problem. So come join the growing number of labs protecting their cell lines with Bambanker™.

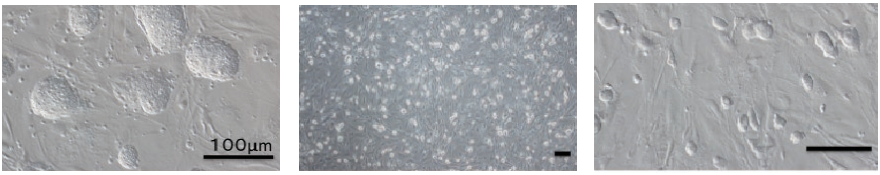
## Serum adds variation to long-term storage

All Bambanker™ products are produced with no serum. Cryopreservation media which contain sera have the disadvantage of fluctuations in recovery rates and undefined composition. Reproducibility of experiments with cells which were frozen in a serum-containing-medium could be affected by lot-to-lot variation of the serum since the composition and concentration of proteins and other biological molecules varies with each batch of serum. This may result in issues when thawing and using cells from such serum-containing media. Breathe easy, as every ingredient of Bambanker™ is precisely defined so that you can be confident that cells stored at different times will all behave and recover similarly.

## Bambanker™ prevents undesired differentiation

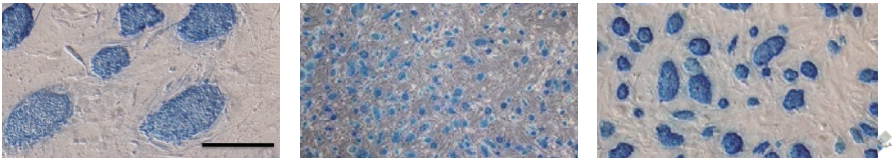
Before freezing

2 days after thawing




ALP staining

3 days after thawing



Cell viability and ALP staining of pluripotent stem cells. Upper row: A great number of cells are detected two days after thawing. The cells show no morphological change after thawing. Lower row: Bambanker™ does not cause cell differentiation as all stem cells frozen down are still producing high levels of alkaline phosphatase, a reporter for pluripotent stem cells.

## Successful frozen cells with Bambanker™

Bambanker™ is suitable for all known cell lines. The JCRB cell bank stores over 1,400 different cell lines with great success with Bambanker™ (look at the Application Note at the next page). Furthermore, there are plenty of published scientifc research papers, describing Bambanker™ as a freezing medium of choice.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| BB01 | Bambanker™ | 120 ml |
| BB02 | Bambanker™ | 5 x 20 ml |
| BB03 | Bambanker™ | 20 ml |

Application Note
2014 <18>

## Application

# Comparing Bambanker™ with another cryopreservation medium for the cultivation of 1,400 different cell lines

The following data were kindly provided by Dr. Arihiro Ohara, National Institute of Biomedical Laboratories JCRB cell bank.

## Background

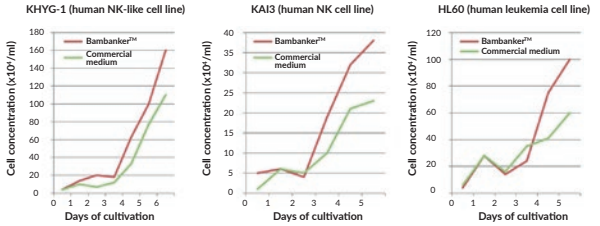
The JCRB cell bank handles approximately 1,400 different cell lines. A low survival rate after thawing frozen cell lines (KHYG-1, KAI3, HL60, OVMANA) has let us to test Bambanker™ and compare it to the up to then used preservation medium for the four cell lines. The growth efficiency after thawing was compared for cells stored with the currently used commercially available preservation medium and Bambanker™.

## Method

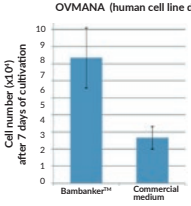
All cultured cells were harvested in the logarithmic growth phase. 1 ml preservation medium was added to approximately 1 x $10^6$ cells in a storage tube. The cells were stored for 2 weeks at -80 °C. The frozen cells were thawed in an 37°C water bath and incubated at 37°C and 5% $CO_2$ in a 96-well plate. Every day the viable cell number was determined.

## Results

Cell lines in suspension




adherent cell line




| | Bambanker™ | Commercial medium |
|---|---|---|
| Recovery rate immediately after thawing | 32% | 39% |

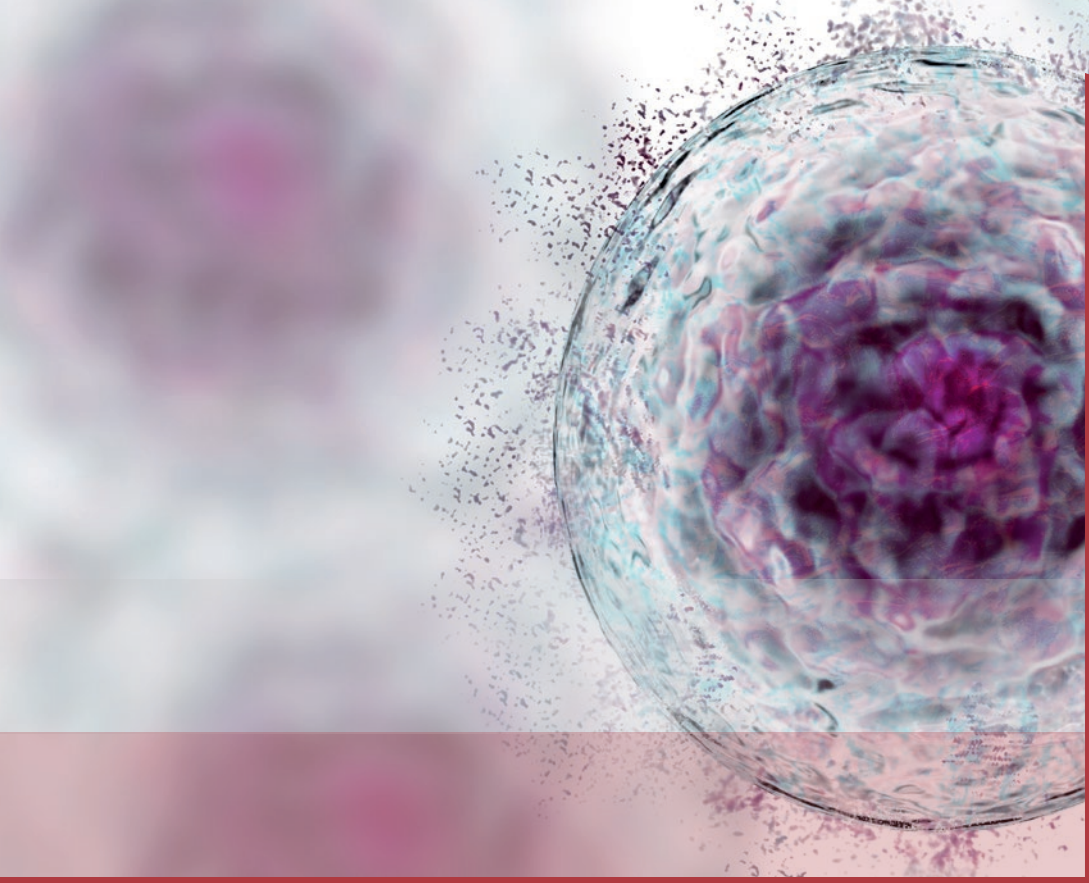
The survival rate after thawing of the four cell lines (KHYG-1, HL60, KAI3, OVMANA) is with the currently used commercially available product and Bambanker™ very low. However, after thawing, the cell proliferation of all four cell lines was improved with Bambanker™ when compared to the currently used commercial product.

**Customers comment**

**Dr. Arihiro Ohara:**

JCRB cell bank has carried out cell bank business for 30 years and we currently store 1,400 types of cell lines. [...] Due to the high number and the wide variety of cell lines, we had some problems. Some users complained that their cell lines died after thawing, resulting in unsuccessful cultivation. Especially four types of cell lines were a problem which had to be urgently improved. Therefore, we compared Bambanker™ with our currently used commercial preservation medium in a cryopreservation test. The cell lines, which were stored with Bambanker™, showed much higher cell proliferation than cells, which were stored with our currently used commercially available product. Surprisingly, with Bambanker™ we got for all four cell lines very reproducible results. [...] In the future, **we will completely change to Bambanker™** in order to improve the survival rate and growth of our cells. We are thankful for resolving that long-standing problem and recommend Bambanker™ to all domestic researchers and foreign cell banks.

**→ The JCRB cell bank has been using Bambanker™ since 2014 for all their cell lines.**



# Freeze your cells for Free!

You want to test StemFit® or Bambanker™? No problem! Just give us a call or write us an email and get your free sample very soon.

Your cells will thank you!

+49 2421 554960
info@nippongenetics.de
**www.nippongenetics.eu**

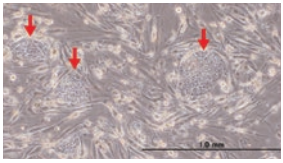
# Bambanker™ - HRM


- **Optimal for the cryopreservation of primate ES and iPS cells**
- **Made with human serum albumin**
- **No animal components - only human albumin**

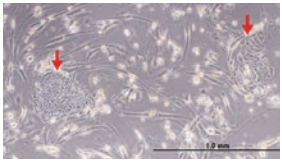
## A new hope for the cryopreservation of ES and iPS cells

Primate embryonic stem cells and induced pluripotent stem cells are extremely sensitive to cryopreservation which presents many difficulties when compared to murine or other cells. At present, the vitrification method is considered adequate for primate ES/iPS cells although the slow-freezing method using DMSO has been popular for a wide variety of cell lines. Vitrification is the rapid cooling of freezing media to a glass-like crystalline state. The vitrification method requires impeccable timing, a high level of skill, and still can yield poor results. In addition, this method shows sensitivity to dry ice transportation. To address these problems, a new freezing medium called Bambanker™ HRM has been developed. What makes it so special is the removal of bovine serum albumin (which can sometimes lead to cell differentiation) and any animal-derived material "xeno-free", both improving the storage and survivability of primate ES/iPS cells while greatly simplifying the protocol.

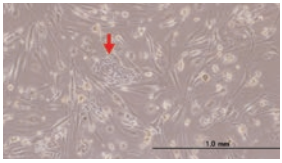
Cells cryopreserved with Bambanker™ HRM 4 days after thawing



Cells cryopreserved with vitrification freezing preservation solution 4 days after thawing



Cells cryopreserved with 10% DMSO containing medium 4 days after thawing



IPS cells (201B7) were cryopreserved in Bambanker™ HRM, in a conventional vitrification medium or in a 10% DMSO/culture medium. After 3 days, the cells were thawed, according to protocol, and then plated. In case of 10% DMSO containing medium only small colonies could be recovered what suggests a small survival rate, while with Bambanker™ HRM it was possible to recover large colonies with almost the same size as achieved with vitrification freezing preservation solution. These results indicate that the same storage efficiency can be achieved with Bambanker™ HRM as with the vitrification preservation solution with the additional advantage of an easier handling.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| BBH01 | Bambanker™ HRM | 20 ml |
| BBH02 | Bambanker™ HRM | 10 ml |

## Application

# Comparison of cryopreservation efficiency for the common marmoset fibroblast cells intended for the iPS cell induction

The following data is kindly provided by Primate Research Institute, University Kyoto, Molecular Physiological Research Department.

## Method

Storage efficiency of Bambanker™ and two other commercial preservative solutions (supplier T, supplier S) for fibroblasts from common Marmoset was compared. Fibroblasts were cultured in a 6 cm petri dish until a confluency of 90-100%. Cells were passaged two times with Trypsin-EDTA (0.25%). After reaction stop, cells were centrifuged at 800 rpm for 5 min. Each pellet was resuspended in 800 µl preservation solution and freezed at -80 °C in Bicell container (Nihon Freezer Co., Ltd.). After two months, the cells were slowly thawed in a water bath and resuspended in 5 ml cell culture medium. Thereafter, the cells were centrifuged again (800 rpm, 5 min), the pellet resuspended in 3 ml cell culture medium and each culture seeded in 6 cm gelatine-coated dishes.

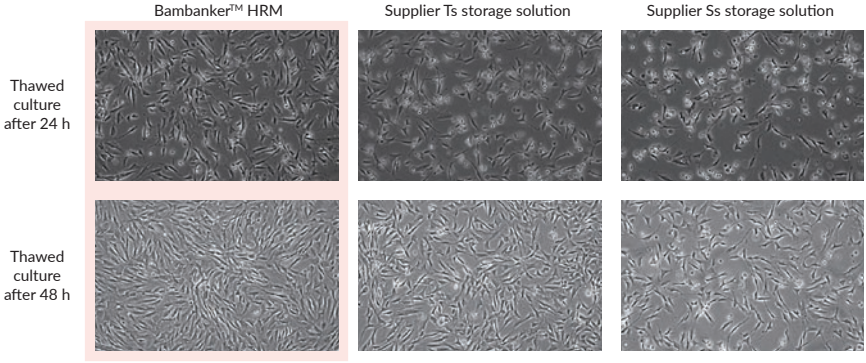
| Freezing method | Preservation solution |
|---|---|
| Slow method | Bambanker™ HRM |
| Slow method | Suppliers Ts storage solution |
| Slow method | Suppliers Ss storage solution |

Slow method:

Freezing and storage of the samples at -80 °C.

## Results

24 and 48 h after thawing photomicrographs were taken for every preservation solution. The percentage of dead cells was determined. The highest survival rate was achieved with Bambanker™ HRM, followed by Supplier Ts storage solution. Supplier Ss storage solution achieved the lowest survival rate. Only the cells which were stored with Bambanker™ HRM showed a sufficient number so that they could be directly used for iPS cell induction.



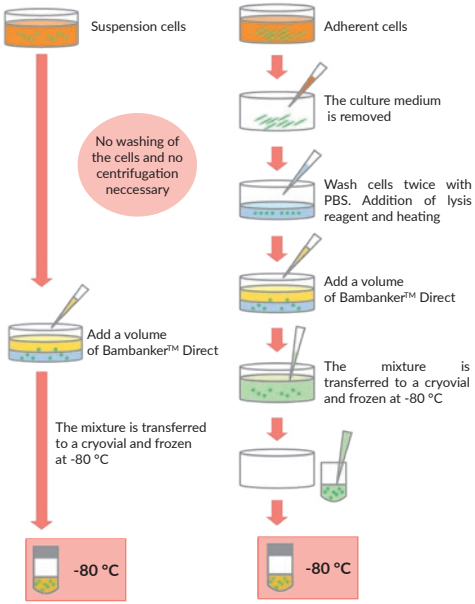

### Customers comment

Bambanker™ HRM is a serum free freezing medium which can be very efficiently used for cryopreservation. Additionally Bambanker™ HRM is cheaper than the competitors solutions. Since the cryopreservation and also the iPS cell induction went really well, we will use in the future Bambanker™ HRM for our fibroblasts.

# Bambanker™ - Direct


## Bambanker™ Direct for hybridomas

There are certain cell types, such as hybridomas, which exhibit increased sensitivity to "over" manipulations. These cells often exhibit higher death rates or unwanted differentiation after long-term storage and freeze-thaw cycling. It is for these types of cells that Bambanker™ Direct was created - to provide tight environmental control. By eliminating the centrifugation step, cells can now be frozen for long-term storage immediately upon addition of the novel cryoprotectant. Just add Bambanker™ Direct, one-to-one, with your cells in media and directly place in freezer. And like with the original Bambanker™, the Direct version has no serum, so it is great for cells for which animal-derived serum may be an issue.




### Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| BBD01 | Bambanker™ Direct | 20 ml |

# Bambanker™ - DMSO-Free

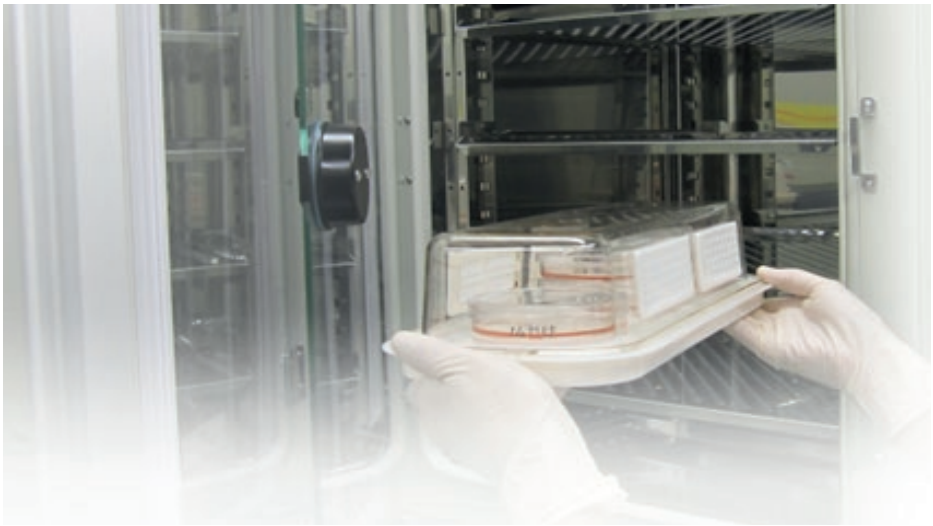

## No more DMSO - for the most sensitive cells

DMSO is added to most freezing reagents to help avoid formation of ice crystals, which of course harm the cells. However, DMSO is cytotoxic and can reduce the survival rate of certain sensitive cell lines. Bambanker™ DMSO Free is made without DMSO. Instead, it uses a unique formulation to avoid the formation of ice crystals. This makes Bambanker™ DMSO Free especially suitable for cell lines that proved to be sensitive to DMSO under long-term storage conditions.

### Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| BBF01 | Bambanker™ DMSO-Free | 20 ml |
| BBF02 | Bambanker™ DMSO-Free | 10 ml |

# FastGene™ Cell Culture Chamber



- **Cell culture protective tray for the protection of your cells**
- **Versatile - Usable with all standard plates, dishes and flasks**
- **Essential to avoid contamination of your cells**

## Protect your valuable cells

Tissue and cell culture are indispensable tools for modern biology. Nevertheless, many cell biologists had the frustrating experience of dealing with microbial infection or even cross-contamination with other cell lines. This problem can become a disaster when difficult-to-obtain primary or stem cells are affected. Cell culture vessels - whether flask or plate or dish - are unknowingly exposed to pathogens in three primary locations: (1) cell culture hood, (2) cell incubator, and (3) during transit from one to the other. It is critical to maintain a sterile environment and pristine cell culture technique, but even perfect protocols don't prevent others in your lab from accidently contaminating your cells. Once a culture container is infected, it can cause the infection to spread to other cell culture vessels throughout the incubator, with the potential to cause massive issues for all of the scientific research in your lab!

## No contamination and no infections

With the FastGene® Cell Culture Chamber, contamination is now a problem of an earlier generation. These simple-to-use chambers provide a sterile and protective environment for your culture plates, dishes, and flasks while in the incubator, under the cell culture hood, or in between. Stop the spread of infection today!

Each FastGene® Cell Culture Chamber can fit numerous plates, dishes, and flasks – making them ideal for labs with multiple users.

## Ordering information

| Cat. No. | Product | Content |
|---|---|---|
| CC01 | FastGene® Cell Culture Chamber | 1 x autoclavable chamber including filters |
| CC01F | Filters | Replacement set containing 4 x filters |

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