Novel Green (10000X)

Cat. No.: SL002-0500 Size: 500 ul
Cat. No.: SL002-0010 Size: 10 ul
Working Reagent Preparation: 1:10,000 dilution in TE, TAE or TBE buffer
Storage: Stable for up to 1 year at -20°C.

Description

The Novel Green provides an easy 2-step method to stain the DNA band from DNA electrophoresis. This unique reagent ensures the DNA to be stained with a high sensitivity and good quality. Novel Green is a next-generation DNA-binding dye ideal for use in quantitative real-time PCR (qPCR) and many other applications. We designed the dye by taking into consideration several essential dye properties relevant to PCR, including PCR inhibition, safety, and stability and fluorescence spectra of the dye. Ethidium bromide (EtBr), which presents sensitivity for detecting 1-5 ng double-stranded DNA (dsDNA) in the agarose gel analysis, has been the most common dye for nucleic acid gel staining. However, several drawbacks of EtBr have been understood, including that EtBr is a mutagen/carcinogen and presents a high risk of inducing cancer. Furthermore, the ultraviolet (UV) light used to illuminate EtBr-DNA compounds probably results in skin or eye damage to the user if misconduct. It's also noted that exposure to the UV light might cause chemical modifications of the DNA samples in the gel, such as the formation of TT dimmers, leading to challenge with the subsequent DNA manipulations. The Novel Green shows a high sensitivity bound with DNA (Fig.1), it also brings a more reliable and safer experience of use, since the stained gel can be visualized with the blue-light transilluminator, thus avoiding the risk of skin/eye damage as well as reducing the side effects of DNA modification caused by the UV light.

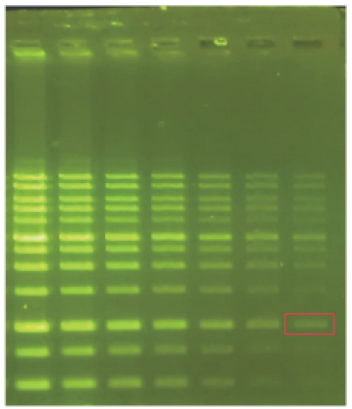

Fig. 1

Fig. 1 The 1 KB DNA Ladder (250-10,000 base pairs, SD010-R600, Simply) was 2X serial diluted (from 2 to 128 dilution, and the concentration of the red mark is 0.72 ng/ 5ul) and loaded in the 1% agarose gel. After electrophoresis, the gel was stained with Novel Green for 10 minutes. The gel was observed the blue-light transilluminator.

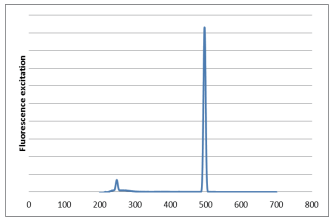

Fig. 2a Fluorescence excitation spectra of the Novel Green.

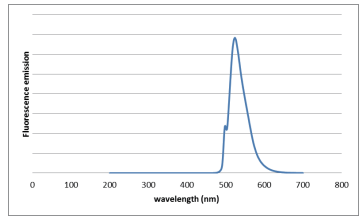

Fig. 2b Fluorescence emission spectra of the Novel Green bound to dsDNA.

Novel Green is excited at 497 nm but also shows a secondary excitation peak at 248 nm (Fig. 2a). After bound to DNA, the fluorescent emission of the Novel Green is centered at 524 nm (Fig. 2b). These spectral characteristics enable this fluorescent dye to be compatible with a wide variety of gel reading facilities.

Features

- Easy disposal.
- Simple to use.
- Ultra sensitive.
- Perfect compatibility with a blue light.
- Flexible for different procedures.

Application

- DNA Staining.

Kit content

Contents	SL002-0500	SL002-0010
Novel Green (10,000X concentration in DMSO)	500 µl	10 µl

Quality Control

The quality of the Novel Green is tested on a lot-to-lot basis to ensure consistent product quality.

Required Materials

- Electrophoresis equipments.
- DNA Markers (optional).
- Blue-light transilluminator.

Buffer Preparation

- 1 to 10,000 dilution in TE, TAE or TBE buffer, mix

Storage

Storage: Stable for up to 1 year at -20°C.

Novel Green (10,000X concentration in DMSO) Protocol

Post-Electrophoresis DNA Staining

1. Perform electrophoresis on an agarose gel
   - The Novel Green is compatible with TAE (40mM Tris-acetate, 1mM EDTA, pH 8), TBE (89 mM Tris base, 89 mM boric acid, 1mM EDTA, pH 8), and TE (20mM Tris base, 1mM EDTA, pH 8) buffers.

2. Dilute the stock Novel Green reagent with the ratio of 1 to 10,000.
   - Stock stain can be diluted in the TE, TAE or TBE buffer. If the staining solution is diluted in water, it should be used within 24 hours.
   - The buffered solution may increase the stability for this fluorescent staining dye.
3. Cover the gel with the staining solution and incubate at the room temperature for 10-30 minutes.
   - Use a plastic container. Do not use a glass container since it will adsorb much of the dye in the staining solution.
   - Protect the staining container from light by covering it with the aluminum foil or place it in the dark.
   - Agitate the gel gently at the room temperature.
   - Staining time will vary with the thickness of the gel and the agarose percentage.
   - No destaining is required.
   - The staining solution may be stored in the dark and at the low temperature for a week or more.
4. Photograph the gel with blue-light transilluminator.
   - It is important to clean the surface of the transillumuntor after/before each use with the deionized water and a soft cloth.
   - Otherwise, fluorescent dyes may accumulate on the glass surface and cause a high fluorescent background.
   - Video cameras and CCD cameras have a different spectral response than the black and white print film, thus it may not exhibit the same degree of sensitivity.

Precasting gel with Novel Green

Novel Green is not suitable for the precast gel. If intending to imagine directly after running gel electrophoresis, please use another product-Novel Juice Supplied in 6X Loading Buffer (Cat. No.: SL001 -1000).

Handling and Disposal

An independent laboratory has shown that Novel Green stain is significantly less mutagenic than the EtBr. However, we must caution that no data are available to address the mutagenicity or toxicity of the Novel Green stain in humans. Because this reagent binds to nucleic acids, it should be treated as a potential mutagen and used with appropriate care. The DMSO stock solution should be handled with particular caution as DMSO is known to facilitate the entry of organic molecules into tissues. Dispose of the stain in compliance with local regulations.

Troubleshooting

Refer to the table below to troubleshoot problems that you may encounter when staining DNA with the Novel Green.

Problem	Cause	Solution
Low sensitivity	Wavelength may not be right.	Check the fluorescence excitation and emission wavelengths.
	Dilution ratio may not be right.	Check the dilution ratio in the 10,000-fold dilution.

Related Ordering Information

Cat. No.	Description	Size
SD010-R500	1 Kb DNA Ladder RTU	500 µl
BK001	BLook LED Transilluminator	1 Set

Caution

- Novel Green is light sensitive and should be stored and protected from light.
- Before opening, the vial should be warmed completely to the ambient temperature for ensuring that the DMSO is thawed thoroughly and that the solution is homogeneous.
- All products are for research use only