USER GUIDE

novex® by life technologies™

InVision™ His-tag In-gel Stain

For specific, sensitive staining of His-tagged fusion proteins

Catalog numbers LC6030, LC6033

Revision Date 19 March 2012

Publication part number 25-0671

MAN0000397

life technologies™

Contents

InVision™ His-tag In-gel Stain Experienced Users Guide

Introduction

This quick reference sheet is included for experienced users of InVision™ His-tag In-gel Stain. If you are a first time user, follow the detailed protocol included in this manual.

Step	Action
Perform Electrophoresis	Perform electrophoresis of His-tagged fusion proteins on a suitable gel. Proceed to staining.
Staining Procedure	Perform all incubations at room temperature and on an orbital shaker set at 1 revolution per second. See page 4 for specific protocol based on the gel type. 1. After electrophoresis, **fix** the gel for 1 hour in the appropriate Fixing Solution (page 6) based on the gel type. Decant the fixative. 2. **Wash** the gel twice for 10 minutes each with ultrapure water to remove the fixative. 3. **Stain** the gel with the ready-to-use solution of InVision™ His-tag In-gel Stain for 1 hour at room temperature. Decant the stain. 4. **Wash** the gel twice for 10 minutes each with 20 mM phosphate buffer, pH 7.8. Proceed to visualizing the gel immediately.
Visualize the Gel	Place the gel on a UV transilluminator equipped with a camera (capable of integration) or use a laser-based scanner to capture an image of the gel. The maximum excitation wavelength for InVision™ His-tag In-gel Stain is at 560 nm and maximum emission wavelength is at 590 nm. InVision™ His-tag In-gel Staining will result in fluorescent His-tagged fusion protein bands.

Contents and Storage

Products

This manual is supplied with the following products:

Product	Quantity	Catalog no.
InVision™ His-tag In-gel Stain	500 mL	LC6030
InVision™ His-tag In-gel Staining Kit	500 mL InVision™ His-tag In-gel Stain 125 µL BenchMark™ His-tagged Protein Standard	LC6033

Contents and Storage

InVision™ His-tag In-gel Stain is shipped at room temperature in an amber bottle. Sufficient stain is supplied for staining 20 mini-gels.

Upon receipt, store InVision™ His-tag In-gel Stain at room temperature, 15°C to 30°C. The stain is stable for 6 months when stored at room temperature.

Note: The stain is pink in color.

Store the BenchMark™ His-tagged Protein Standard (included with Cat. no. LC6033) at −30°C to −10°C upon receipt. The standard is stable for 6 months when stored at −20°C.

Product use

For research use only. Not intended for any animal or human therapeutic or diagnostic use.

Introduction

Product Description

Description

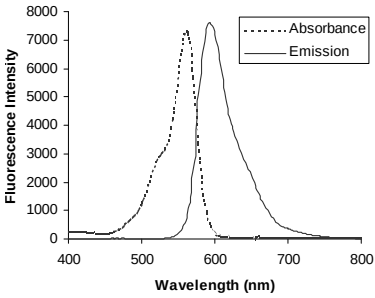
InVision™ His-tag In-gel Stain is a ready-to-use, proprietary fluorescent stain that is specially formulated for fast, sensitive, and specific detection of His-tagged fusion proteins.

The staining of a mini-gel is complete in less than 3 hours and is capable of detecting ~0.5 picomole of a 6X His-tagged fusion protein (e.g. 1 picomole of a 30 kDa protein is 30 ng).

InVision™ His-tag In-gel Stain

The InVision™ His-tag In-gel Stain consists of a proprietary fluorescent dye conjugated to Ni^{2+}: nitrilotriacetic acid (NTA) complex. The Ni^{2+} binds specifically to the oligohisitidine domain of the His-tagged fusion protein allowing specific detection of His-tagged fusion proteins from a mixture of endogenous proteins.

The fluorescent dye has maximum excitation at 560 nm (the dye can also be excited at 300 nm but with a lower efficiency) and maximum emission at 590 nm (see the following figure). This allows you to detect the InVision™ His-tag Stain signal using a UV transilluminator equipped with a camera (capable of integration) or a laser-based scanner.



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Product Description, Continued

Features

The important features of the InVision™ His-tag In-gel Stain are:

- His-tagged fusion protein sensitivity at the picomole level and staining is linear over 4 orders of magnitude
- Capable of detecting C-terminal, N-terminal, and internal His tag on fusion proteins
- Directly detect His-tagged fusion proteins in the gel without the need for western blotting and detection
- Supplied as a ready-to-use solution
- Staining complete in < 3 hours
- Staining compatible with downstream applications such as Coomassie staining, fluorescent staining, silver staining, western blotting, Edman sequencing, or mass spectrometry analysis

Note

Proteins containing a C-terminal, N-terminal, and internal His tag can be stained with the InVision™ His-tag In-gel Stain. However, the staining intensity may vary and is dependent on the individual protein.

The staining intensity is also sensitive to the number of moles of protein contained in a protein band as 1 molecule of InVision™ His-tag In-gel Stain binds to only 1 oligohistidine tag molecule of the protein.

For example, if you load 150 ng/band of 2 proteins with a molecular weight of 150 kDa and 30 kDa, respectively, after staining with InVision™ His-tag In-gel Stain the 30 kDa band stains more intensely than the 150 kDa band. This is because there is only 1 picomole of the 150 kDa band while there are 5 picomoles of the 30 kDa band in the total mass loaded (150 ng/band).

Experimental Overview

Introduction

To visualize His-tagged fusion protein bands after staining, you will need a UV transilluminator equipped with a camera or a laser-based scanner. See **Visualize the Gel**.

Experimental Outline

After electrophoresis, the proteins are fixed in the mini-gel for 1 hour. The gel is washed to remove the fixative. Staining is performed at room temperature for 1 hour with the ready-to use InVision™ His-tag In-gel Stain. The stain is washed and His-tagged fusion protein bands are visualized using a UV transilluminator and a standard imaging system equipped with an ethidium bromide filter. The protein bands can also be imaged using a laser-based scanner.

The gel can be stained with Coomassie, silver, or fluorescent stains for total protein content after InVision™ staining.

Visualize the Gel

For optimal visualization of fluorescent bands, you will need a:

- UV transilluminator (302 nm) equipped with a camera capable of integration

  To view and photograph a gel on the UV transilluminator, use a video camera, CCD (Charged Couple Device) camera, or a cooled CCD camera with ethidium bromide filter or band pass filter encompassing the emission maxima (590 nm) of the stain. A Polaroid® camera is not recommended.

  Note: You can use 365 nm UV transilluminator, but you may have to expose the gel for a longer time, as the sensitivity is lower than using 302 nm UV transillumination.

  or

- Laser-based scanner with a laser line that falls within the excitation maxima of the stain (560 nm), and a 560 nm long pass filter or a band pass filter centered near the emission maxima of 590 nm. The sensitivity of detection is 2-fold more with laser-based scanners than with UV transillumination using a 532 nm laser line and a 560 nm long pass filter.

Methods

Using InVision™ His-tag In-gel Stain

Introduction

Instructions for using InVision™ His-tag In-gel Stain are described on the following pages. Use the staining protocol specific for each gel type. **The total staining time is ~2.5 hours.**

An alternate, quick microwave staining protocol is on page 10.

Materials Required but not Supplied

- Ultrapure water (>18 megohm/cm resistance recommended)
- Staining tray (a polypropylene tray is recommended)
- Orbital shaker
- Acetic acid
- 100% ethanol or methanol
- 20 mM Phosphate buffer, pH 7.8 (see page 6 for a recipe)

Positive Control

The BenchMark™ His-tagged Protein Standard is ideal for use as a positive control for the InVision™ His-tag In-gel Stain. The standards are formulated to allow simultaneous detection of standards and your His-tagged fusion protein on the gel using the staining protocol described in this manual. The standards are included in the InVision™ His-tag In-gel Staining Kit (Cat. no. LC6033).

Load 5 µL of the BenchMark™ His-tagged Protein Standard on a 1.0-mm thick mini-gel and proceed to staining.

Continued on next page

Using InVision™ His-tag In-gel Stain,
Continued

For optimal staining results, follow these guidelines:

- Use 5 µL of BenchMark™ His-tagged Protein Standard on a mini-gel as a positive control for staining
- The SDS content in the gel must be less than 0.1%
- Wear gloves and laboratory coat while handling and staining gels
- Use clean containers and designate these containers for staining purposes only
- Make sure that the size of the container permits free movement of the gel during shaking and **complete immersion in solution while staining and washing**
- Avoid touching the gel with bare hands while handling or changing solutions
- Always clean the imaging system prior to imaging the gel to minimize any background fluorescence
- Perform all incubations for staining and washing steps at room temperature on an orbital shaker set at 1 revolution per second

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Using InVision™ His-tag In-gel Stain, Continued

Prepare Solutions

Prepare the following solutions for fixing and washing steps:

- **Fixing Solution for NuPAGE® Novex Gels**

  You will need 100 mL fixative for 1 mini-gel.

Ethanol or methanol	40 mL
Acetic acid	10 mL
Ultrapure water	to 100 mL

- **Fixing Solution for Tris-Glycine Gels**

  You will need 200 mL fixative for 1 mini-gel and 400 mL for 1 large format gel.

Ethanol or methanol	100 mL
Acetic acid	20 mL
Ultrapure water	to 200 mL

- **20 mM Phosphate Buffer pH 7.8 (1000 mL)**

Sodium phosphate (monobasic)	2.6 g
Adjust pH to 7.8 with 3 M NaOH	
Ultrapure water	to 1000 mL

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Using InVision™ His-tag In-gel Stain,
Continued

Staining NuPAGE® Gels

For general use with **1.0-mm** thick NuPAGE® Novex Gels (8 × 8 cm).

For staining 2 mini-gels or **1.5-mm** thick mini-gels, double all solution volumes while maintaining the incubation time.

Step	Solution	Vol/Gel	Time
1	After electrophoresis, fix the gel in the NuPAGE® Fixing Solution (see page 6 for recipe). See the following **Note**.	100 mL	1 hour
2A	Decant the Fixing Solution and wash the gel twice with ultra pure water.	100 mL	10 minutes
2B		100 mL	10 minutes
3	Incubate the gel in the ready-to-use solution of InVision™ His-tag In-gel Stain (see the following **Note**). **Be sure the gel is immersed in staining solution.** Decant the stain.	25 mL	1 hour
4A	Wash the gel twice with 20 mM phosphate buffer, pH 7.8 (see page 6 for recipe). *If the background is high, perform a third wash step with water for 10 minutes. Avoid excessive washing of the gel (see the following **Note**).	100 mL	10 minutes
4B		100 mL	10 minutes*
5	Proceed to imaging the gel immediately (page 11).		

Note

- To improve the sensitivity, you may store the gel overnight in fixative or in the InVision™ His-tag In-gel Stain.
- Excessive washing of the gel in the phosphate buffer after staining may result in loss of sensitivity.
- Do not re-use the stain. After staining is complete, dispose of the stain as described on page 10.

Continued on next page

Using InVision™ His-tag In-gel Stain,
Continued

Staining Tris-Glycine Mini-Gels

For general use with **1.0-mm or 1.5-mm** thick Tris-Glycine mini-gels (8 × 8 cm).

Note: The SDS content of the gel must be less than 0.1%.

For staining 2 mini-gels, double all solution volumes while maintaining the incubation time.

To stain **large format** gels, see page 9.

Step	Solution	Vol/Gel	Time
1	After electrophoresis, fix the gel in the Fixing Solution for Tris-Glycine gels (see page 6 for recipe). See the **Note** on page 7.	200 mL	1 hour
2A	Decant the Fixing Solution and wash the gel twice with ultra pure water.	200 mL	10 minutes
2B		200 mL	10 minutes
3	Incubate the gel in the ready-to-use solution of InVision™ His-tag In-gel Stain (see the **Note** on page 7). **Be sure the gel is immersed in staining solution.** Decant the stain.	25 mL	1 hour
4A	Wash the gel twice with 20 mM phosphate buffer, pH 7.8 (see page 6 for recipe). *If the background is high, perform a third wash step with water for 10 minutes. Avoid excessive washing of the gel (see the **Note** on page 7).	200 mL	10 minutes
4B		200 mL	10 minutes*
5	Proceed to imaging the gel immediately (page 11).		

Continued on next page

Using InVision™ His-tag In-gel Stain, Continued

Staining Tris-Glycine Large Format Gels

For general use with **1.0 mm or 1.5 mm** thick Tris-Glycine large format gels (18 × 18 cm).

To stain Tris-Glycine mini-gels, see page 8.

Step	Solution	Vol/Gel	Time	
			1.0 mm	1.5 mm
1	After electrophoresis, fix the gel in the Fixing Solution for Tris-Glycine gels (see page 6 for recipe). See the **Note** on page 7.	400 mL	1 hour	90 min.
2A	Decant the Fixing Solution and wash the gel twice with ultra pure water.	400 mL	10 min.	15 min.
2B		400 mL	10 min.	15 min.
3	Incubate the gel in the ready-to-use solution of InVision™ His-tag In-gel Stain (see the **Note** on page 7). **Be sure the gel is immersed in staining solution.** Decant the stain.	100 mL	1 hour	90 min.
4A	Wash the gel twice with 20 mM phosphate buffer, pH 7.8 (see page 6 for recipe). *If the background is high, perform a third water wash step for 10 minutes. Avoid excessive washing of the gel (see the **Note** on page 7).	400 mL	10 min.	15 min.
4B		400 mL	10 min*	15 min.
5	Proceed to imaging the gel immediately (page 11).			

Staining E-PAGE™ *96* Gels

The E-PAGE™ *96* gels are thicker than standard mini-gels. To obtain better staining sensitivity, we recommend transferring proteins of the E-PAGE™ *96* gels onto a nitrocellulose membrane. Then stain the blot with the InVision™ His-tag In-gel Stain as described in **Detect His-tagged Fusion Proteins on a Blot** on page 14.

Continued on next page

Using InVision™ His-tag In-gel Stain, Continued

Microwave Procedure

The microwave staining procedure uses a microwave oven to rapidly stain His-tagged fusion proteins in a mini-gel. You will need a microwave oven (~1000 W) and microwaveable staining tray.

The total staining time is ~70 minutes.

For general use with **1.0-mm** thick NuPAGE® Novex and Tris-Glycine mini-gels (8 × 8 cm).

1. **Fix the gel** in 100 mL of the appropriate Fixing Solution (see page 6 for preparing fixing solution). Microwave at high power (~1000 W) for 30 seconds. Remove the gel from the microwave and gently agitate the gel for 10 minutes at room temperature. Decant the fixative.
2. **Wash the gel** in 100 mL ultrapure water. Microwave at high power for 30 seconds. Remove the gel from the microwave and gently agitate the gel for 5 minutes at room temperature. Repeat the wash step 1 more time.
3. **Stain the gel** in 25 mL ready-to-use solution of InVision™ His-tag In-gel Stain. Microwave at high power for 30 seconds. Remove the gel from the microwave and gently agitate the gel for 40 minutes at room temperature on an orbital shaker. Decant the stain (see **Dispose of the** Stain for stain disposal information). Do not re-use the stain.
4. **Wash the gel** in 100 mL 20 mM phosphate buffer, pH 7.8 (see page 6 for a recipe). Microwave at high power for 30 seconds. Remove the gel from the microwave and gently agitate the gel for 5 minutes at room temperature. Repeat the wash step 1 more time.

   Note: Additional washes with 20 mM phosphate buffer, pH 7.8, may be necessary in some cases to reduce the background.

Proceed to imaging the gel immediately, page 11.

Dispose of the Stain

For disposal requirements in your area, consult your safety officer. For SDS information, see page 19.

Visualizing and Imaging the Gel

Introduction

After staining is complete, proceed immediately to visualizing and imaging the gel. To obtain the best results, use the appropriate camera and filters and follow the recommendations listed on page 12.

Important

Unlike visualizing DNA bands stained with ethidium bromide, the fluorescent protein bands stained with InVision™ His-tag In-gel Stain cannot be visualized by just placing the gel on a UV transilluminator.

To visualize the His-tagged fusion protein bands, it is important to **use a photographic camera or a CCD camera with a UV transilluminator** as the integrating capability of the camera allows you to visualize bands that cannot be detected by eye.

Materials Needed

For optimal visualization of protein bands, you will need a:

- UV transilluminator (302 nm) equipped with a camera capable of integration

  To view and photograph a gel on the UV transilluminator, use a video camera, CCD (Charged Couple Device) camera, or a cooled CCD camera with ethidium bromide filter or band pass filter encompassing the emission maxima (590 nm) of the stain. A Polaroid® camera is not recommended.

  Note: You can use 365 nm UV transilluminator, but you may have to expose the gel for a longer time, as the sensitivity is lower than using 302 nm UV transillumination.

  or

- Laser-based scanner with a laser line that falls within the excitation maxima of the stain (560 nm), and a 560 nm long pass filter or a band pass filter centered near the emission maxima of 590 nm. The sensitivity of detection is 2-fold more with laser-based scanners than with UV transillumination using a 532 nm laser line and a 560 nm long pass filter.

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Visualizing and Imaging the Gel, Continued

- To visualize the bands, it is important to use a photographic camera or a CCD camera with a UV transilluminator as the integrating capability of the camera allows visualization of bands that cannot be detected by eye.
- Be sure that the aperture on the camera is open wide to allow enough light entry and select ethidium bromide, Cy3®, or rhodamine filter on the camera.
- Make sure the camera is connected to an imaging software that allows contrast adjustment for viewing the best image.
- Lower the PMT (Photo Multiplier Tube) voltage, if using a laser scanner to avoid saturation of the detector.
- Record a permanent image of the gel prior to staining the gel with other protein stains and gel drying since the staining with InVision™ His-tag In-gel Stain is not permanent and is lost by excessive washing, storing the gel in phosphate buffer, staining with other protein stains, or drying the gel.

Imaging the Gel

1. Place the gel on a UV transilluminator (302 nm) and make sure the ethidium bromide, Cy3®, or rhodamine filter is selected on the camera. You may also use a laser-based scanning instrument (see page 11 for more details).
2. Image the gel with a video or CCD camera with the appropriate filters using 4–8 second exposure. You may need to adjust the brightness and contrast to reduce any faint non-specific bands. During imaging of the gel, the fluorescent signal is stable for more than 20 minutes.

   You should see fluorescent bands of His-tagged fusion proteins and the gel should have minimal background as shown on page 15.

Note: If the background is high, perform an additional wash step and re-image the gel. We do not recommend storing the gel in phosphate buffer as the sensitivity of the stain gradually decreases.

Downstream Applications

Introduction

After InVision™ His-tag In-gel Staining of His-tagged fusion proteins, the gel is compatible with any downstream applications such as:

- Coomassie staining
- Fluorescent staining
- Silver staining
- Western blotting
- Edman sequencing
- Mass spectrometry analysis

Staining the Gel for Total Protein

Use the following instructions for staining the gel with protein stains to view the total protein content of the sample.

1. Record a permanent image of the gel after staining the His-tagged fusion proteins with InVision™ Stain.
2. Follow the appropriate staining protocol.

   Note: A fixing step is not necessary for any total protein staining procedure as the proteins are fixed in the gel during InVision™ His-tag In-gel Staining procedure.

SimplyBlue™ SafeStain Procedure

1. Stain the gel for 1 hour with gentle shaking at room temperature with enough SimplyBlue™ SafeStain (see page vi for ordering information) to cover the gel.
2. Wash the gel with 100 mL deionized water for 1–3 hours.

Coomassie R-250 Staining Procedure

You may use any Coomassie R-250 staining procedure of choice. Perform the staining and destaining steps using a procedure of choice.

Fluorescent Protein Staining Procedure

Follow the manufacturer's instructions to stain and view the protein bands on the gel using SYPRO® Ruby Protein Gel Stain (see page 18 for ordering information).

Continued on next page

Downstream Applications, Continued

Western Blot

To perform western blotting after InVision™ His-tag In-gel Staining of His-tagged fusion proteins:

1. Record a permanent image of the gel after staining of His-tagged fusion proteins.
2. Equilibrate the gel in 1X SDS Running Buffer for 1 hour.
3. Perform western blotting and immunodetection using a method of choice.

Detect His-tagged Fusion Proteins on a Blot

To stain His-tagged fusion proteins transferred onto a nitrocellulose membrane (8 × 8 cm), use the following protocol.

This procedure is **not recommended** for staining PVDF membranes.

1. Rinse the nitrocellulose membrane (containing transferred proteins) with deionized water for 2 minutes.
2. Stain the nitrocellulose membrane with 20 mL of ready-to-use InVision™ His-tag In-gel Stain for 20 minutes at room temperature.
3. Rinse the membrane briefly with deionized water.
4. Place the wet or dry membrane on a UV transilluminator equipped with a camera. Visualize and image the membrane by exposing the membrane to UV light from the bottom or from the top (you may place the UV transilluminator on its side to illuminate the blot or use epi-illumination) for 4–8 seconds. You may also use a laser-based scanner with appropriate filters to visualize and image the membrane.

Prepare Protein Bands for MS Analysis

Proteins stained with InVision™ His-tag In-gel Stain are compatible with mass spectrometry (MS) analysis.

After InVision™ His-tag In-gel Staining of His-tagged fusion proteins, excise the desired protein band/spot, and wash the gel plug thoroughly with ultrapure water to remove any bound nickel ions that may interfere with enzymatic digestion prior to MS analysis.

Prepare your samples for MS analysis using a method of choice or as directed by your core facility.

Expected Results

Results

An example of a mini-gel stained with InVision™ His-tag In-gel Stain is shown below.

Samples were electrophoresed on a NuPAGE® Novex 4–12% Bis-Tris Gel. The gel was stained with InVision™ His-tag In-gel Stain using the protocol on page 7 and imaged with a UV transilluminator equipped with a video camera (AlphaImager® Imaging System) using a 4 second exposure. The gel was subsequently Coomassie-stained for total protein with SimplyBlue™ SafeStain (B).

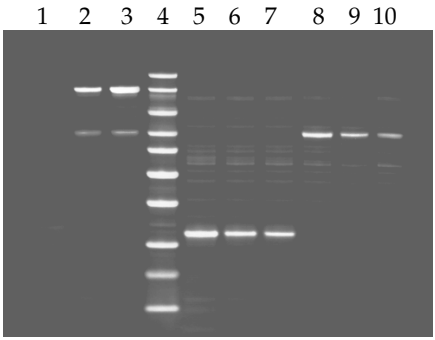
Lanes 1–3: His/LacZ expression in BL21 *E. coli* lysate uninduced, 1 hour post induction, 2 hours post induction, respectively

Lane 4: 5 µL BenchMark™ His-tagged Protein Standard

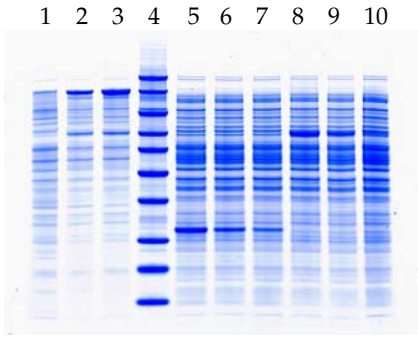
Lanes 5–7: 160 ng, 80 ng, 40 ng, respectively, of pure 25 kDa His-tagged fusion protein mixed with BL21 Star™ *E. coli* lysate

Lane 8–10: 160 ng, 80 ng, 40 ng, respectively, of pure 60 kDa His-tagged fusion protein mixed with BL21 Star™ *E. coli* lysate

InVision™ His-tag In-gel Stain (A)



SimplyBlue™ SafeStain (B)



Troubleshooting

Introduction

Solutions to possible problems you might encounter while using the InVision™ His-tag In-gel Stain are listed in the following table.

Observation	Cause	Solution
No bands or weak signal	Check staining protocol	Use appropriate staining protocol based on the gel type. Use BenchMark™ His-tagged Protein Standard as a positive control to verify staining reagents and protocol. Avoid excessive washing of the gel.
	The gel is not visualized or imaged properly	• Be sure to visualize the gel using a UV transilluminator equipped with a camera (page 3) or a laser-based scanner using the correct filters (page 3). A Polaroid® camera is not recommended. • Make sure the aperture on the camera is open wide to allow enough light entry and that the camera is connected to an imaging software that allows contrast adjustment for viewing the best image. • Visualize the gel immediately after completing the washing steps. Storing the gel in phosphate buffer decreases the signal intensity.
	Low protein load or expression level	• Check total protein content of the gel by staining the gel with a total protein stain (page 13). Load at least 1 picomole of the His-tagged fusion protein for detection. • Make sure the His-tag is in-frame and the protein is expressed properly.

Continued on next page

Troubleshooting, Continued

Observation	Cause	Solution
High, uneven background	Missed washing steps	Be sure to wash the gel twice with 20 mM phosphate buffer. If the background is high, perform a third water wash step for 10 minutes.
	Poor water quality	Use ultrapure water (>18 megohm/cm) for washing and preparing phosphate buffer.
	Protein overloaded	Decrease the protein concentration or lower the sample volume.
	Dirty imaging platform	Always clean the imaging system with a paper towel prior to imaging the gel to minimize any background fluorescence.
	Non-specific bands	Highly basic proteins and divalent metal binding proteins such as carbonic anhydrase (30 kDa), SlyD (21 kDa), and phosphorylase B (97 kDa) may cross-react with the stain producing non-specific bands.
Additional bands seen with BenchMark™ His-tagged Protein Standard	Overexposure	• Performing a longer exposure to detect low expression levels of the desired protein may result in staining of minor contaminants in the BenchMark™ His-tagged Protein Standard. • Load less BenchMark™ His-tagged protein Standard or perform a short exposure to visualize and image the standard and then perform a longer exposure to visualize and image proteins expressed at low levels.

Appendix

Accessory Products

Additional Products

Additional products are available separately. Ordering information is listed below. For more details, visit www.lifetechnologies.com or contact Technical Support (page 19).

Product	Quantity	Catalog no.
BenchMark™ His-tagged Protein Standard	125 µL	LC5606
NuPAGE® Novex 4–12% Bis-Tris Gels	10 gels	NP0321BOX
Novex 10% Tris-Glycine Gels	10 gels	EC6075BOX
E-PAGE™ *96* Gels	1 kit	EP096-06
XCell *SureLock*® Mini-Cell	1 kit	EI0001
SimplyBlue™ SafeStain	1 L	LC6060
SilverQuest™ Silver Staining Kit	1 kit	LC6070
ProBond™ Purification System	6 purif.	K850-01
Ni-NTA Purification System	6 purif.	K950-01
SYPRO® Ruby Protein Gel Stain	1 L	S-12000

Technical Support

Obtaining support

For the latest services and support information for all locations, go to **www.lifetechnologies.com/support**.

At the website, you can:

- Access worldwide telephone and fax numbers to contact Technical Support and Sales facilities
- Search through frequently asked questions (FAQs)
- Submit a question directly to Technical Support (**techsupport@lifetech.com**)
- Search for user documents, Safety Data Sheets (SDSs), vector maps and sequences, application notes, formulations, handbooks, certificates of analysis, citations, and other product support documents
- Obtain information about customer training
- Download software updates and patches

Safety Data Sheets (SDS)

Safety Data Sheets (SDSs) are available at **www.lifetechnologies.com/support**.

Certificate of Analysis

The Certificate of Analysis provides detailed quality control and product qualification information for each product. Certificates of Analysis are available on our website. Go to **www.lifetechnologies.com/support** and search for the Certificate of Analysis by product lot number, which is printed on the box.

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Limited Warranty

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