Product Information

TyraMax™ Amplification Dyes for Spatial Imaging

See product page for a full list of product names, unit sizes, and catalog numbers.

Storage and Handling

Store at 4°C, protected from light. Product is stable for at least 12 months from date of receipt when stored as recommended.

Product Technical Information

See product page for spectral properties and other dye-specific technical information. See our Spectra Viewer to view and download the dye excitation and emission spectra.

Product Description

Tyramide signal amplification (TSA), sometimes called Catalyzed Reporter Deposition (CARD), is a highly sensitive method enabling the detection of low-abundance targets in fluorescent immunocytochemistry (ICC), immunohistochemistry (IHC), and *in situ* hybridization (FISH) applications.

TyraMax™ Dyes are Biotium's next generation of tyramide amplification dyes for spatial biology. The dyes have been designed to yield a brighter signal compared to our original CF® Dye tyramides, and have advantages in brightness and photostability compared to Aluora™ and Opal™ reagents.

TSA involves horseradish peroxidase (HRP)-catalyzed deposition of a labeled tyramide on and near a target protein or nucleic acid sequence *in situ*. HRP is able to convert the labeled tyramide substrate into a highly reactive form that covalently binds to tyrosine residues on proteins at or near the HRP conjugate. This generates high-density tyramide labeling for fluorescence signal amplification, which can achieve up to 100-fold higher sensitivity compared to conventional immunofluorescence staining.

Because the tyramide dye covalently labels the target, multiple rounds of TSA can be performed for multicolor detection by inactivating HRP or by stripping antibodies from the sample between rounds of staining (see Figure 1). When antibody stripping is used for multiplexing, TSA not only facilitates detection of low-abundance targets, but also simplifies antibody panel design because multiple primary antibodies may be used irrespective of host species or isotype without cross-reactivity. TyraMax™ Amplification Dyes are available with a wide choice of dye options for multiplexing by conventional or spectral imaging. TyraMax™ Dyes are offered as standalone dye solutions, as 3-color or 5-color dye sets plus DAPI counterstain, and in a sampler for custom panel optimization.

Unlike other commercially available tyramide amplification dyes, all of the TyraMax™ Dyes are stable in tyramide amplification buffer for up to 24 hours, facilitating automated staining protocols.

We recommend using Biotium's Tyramide Amplification Buffer Plus (Cat. No. 22029) with TyraMax™ Amplification Dyes.

Considerations for Staining

- Primary antibodies used with the following protocols should be validated for your sample of interest using standard immunofluorescence or immunohistochemical methods.
- Primary antibody concentration may require optimization. We recommend using the supplier's recommended dilution as a starting point for titration.
- TSA produces higher sensitivity and stronger signal compared to using fluorescent secondary antibody conjugates. As a result, it may be optimal to use primary antibody at a lower concentration to minimize background fluorescence from non-specific binding. We recommend doing a primary antibody titration to find the optimal concentration.
- Highly cross-adsorbed HRP-labeled secondary antibodies are recommended for tissue staining and multiplex staining using the peroxidase quenching method (see Protocol step 6). For staining rat tissue with mouse primary antibodies, make sure to select an HRP-labeled anti-mouse secondary antibody that has minimal cross-reactivity with rat immunoglobulins.
- Staining of mouse tissues with anti-mouse antibodies (known as mouse-on-mouse staining) may require special protocols to block binding of endogenous antibodies in the tissue.
- Due to the large number of dyes deposited around the target during TSA, the tyramide fluorescence signal may be more diffuse or fuzzy compared to staining with fluorescent antibody conjugates. Because of this, TSA is typically used for protein localization at the cell or tissue level, not for high-resolution imaging of sub-cellular protein localization. Using a lower concentration of primary antibody, a lower concentration of TyraMax™ Dye, or a shorter tyramide reaction time may improve the crispness of fluorescent tyramide staining.
- We recommend preparing negative control samples using an HRP-labeled secondary and the TSA reagents, without a primary antibody. It is also advisable to prepare negative control samples without an HRP conjugate to check for endogenous peroxidase activity. Make sure the negative controls are not cross-contaminated by reagents from the positive samples during incubation and washing.

Considerations for Staining (continued from page 1)

- Autofluorescence is a common source of background in tissue samples. We recommend imaging an unstained control (with no antibody or tyramide added) to determine the level of autofluorescence. Due to the strong signal generated by TSA, autofluorescence may not contribute to background with the imaging settings used for detecting tyramide signal. If autofluorescence interferes with detection, using one of Biotium's TrueBlack® Autofluorescence Quenchers (see Related Products) may improve signal-to-noise.
- Multiple TyraMax® Amplification Dyes can be used sequentially to label different targets on the same sample (see Figure 1 and Protocol step 6). Biotium offers sets for 3-plex and 5-plex TyraMax™ staining, or a sampler set for designing custom color combinations. For multiplexing, make sure your microscope is capable of separating the fluorescence signals of the TyraMax™ Dyes, and include single-stain controls to rule out cross-talk between channels and incomplete HRP stripping or inactivation.
- For TSA with TyraMax™ Dyes, we recommend using Tyramide Amplification Buffer Plus (Cat. No. 22029), which is supplied with a vial of hydrogen peroxide. We also offer Ready-to-Use Tyramide Amplification Buffer (Cat. No. 22027) which does not require addition of hydrogen peroxide before use, but which usually produces lower signal intensity.

Staining Protocols

The following protocols are for immunostaining and tyramide amplification of cells or tissue sections using 100 uL per sample (enough to cover one well of a 96-well plate or ~1 cm^2 tissue section). Volumes may be scaled for different specimen sizes.

Additional Materials

The following materials may be required depending on sample type and workflow, but are not provided:

- Buffer components:
  - 1X PBS (see Related Products)
  - Triton® X-100
- Deparaffinization reagents:
  - Xylenes or xylene substitute
  - Ethanol
- Heat-induced antigen retrieval (HIER) buffer:
  - AntiFix™ Universal Antigen Retrieval Buffer, 10X (Cat. No. 22030), or citrate buffer pH 6.0, or Tris HCl pH 9.0, as recommended for your antigen of interest
- Fixative:
  - Methanol (pre-chilled at -20°C) or 4% paraformaldehyde in PBS (Cat. No. 22023)
- Peroxidase quenching reagents:
  - 10% sodium azide (NaN_3)
  - 30% hydrogen peroxide (H_2O_2)
- Endogenous biotin blocking reagents (for biotin detection only):
  - Commercial biotin blocking kit, or unlabeled streptavidin and biotin
  - Tween® 20 (Cat. No. 22002)
- Protein blocking and antibody dilution buffer:
  - Bovine serum albumin fraction V (Cat. No. 22013) or fish gelatin (Cat. No. 22011)
- Primary antibody or biotinylated primary antibody
- HRP-conjugated secondary antibody or HRP-streptavidin (see Related Products)
- Tyramide Amplification Buffer Plus (Cat. No. 22029) (supplied with a vial of 30% H_2O_2)

1. Reagent preparation

Note: Sodium azide inhibits HRP. Do NOT add sodium azide to any reagent solutions unless specified.

1.1 Prepare 10% Triton® X-100 in dH_2O: Add 1 mL of Triton® X-100 to 9 mL of dH_2O. Dissolve completely by rocking or stirring. Store at room temperature.

Note: Triton® X-100 is a viscous liquid. Reverse pipetting or using a 1 mL syringe is recommended for measuring and dispensing.

1.2 Prepare 10% sodium azide (NaN_3) in dH_2O for peroxidase quenching buffer: Dissolve 1 g of sodium azide in dH_2O and adjust the final volume to 10 mL. Store at room temperature.

Danger! Sodium azide is fatal if swallowed, see supplier safety data sheet for full hazard information.

1.3 For biotin blocking (if not using commercial biotin blocking kit):

1.3.1 Biotin blocking wash buffer: Prepare 1% BSA in PBS by dissolving 1 g of BSA in 100 mL of PBS. Add 50 uL of Tween® 20 for a final concentration of 0.05% Tween® 20. Stir or shake to mix completely. Store in aliquots at -20°C.

Note: Tween® 20 is a viscous liquid. Reverse pipetting is recommended for measuring and dispensing.

1.3.2 Unlabeled streptavidin solution: Prepare 0.1 mg/mL streptavidin in biotin blocking wash buffer. Store at -20°C.

1.3.3 Biotin solution: Prepare 0.5 mg/mL biotin in biotin blocking wash buffer. Store at -20°C.

1.4 Protein blocking buffer:

a. BSA-based: Prepare 1% BSA blocking buffer by dissolving 1 g of BSA in 100 mL of PBS. Add 1 mL of 10% Triton® X-100 solution and mix well. Aliquot and store at -20°C.

b. Gelatin-based: Prepare 2% fish gelatin blocking buffer by dissolving 2 g of fish gelatin in 100 mL of PBS. Add 1 mL of 10% Triton® X-100 solution and mix well. Aliquot and store at -20°C.

Note: Alternatively, you may use your preferred blocking buffer if it does not contain sodium azide. Blocking buffer should contain 0.1% to 0.5% Triton® X-100 for staining intracellular targets in formaldehyde-fixed cells.

2. Deparaffinize or fixation and pre-treatment

Fix, permeabilize, and block cell or tissue samples following general immunohistochemistry protocols. The following steps are provided as examples. Other procedures may be used if optimal for your sample or target. Fixation and other conditions may need to be optimized for specific application.

2.1 Deparaffinization and antigen retrieval (for paraffin section only): Perform deparaffinization and rehydration according to standard protocols. If necessary, perform antigen retrieval as recommended for your primary antibody.

2.2 Fixation (for unfixed cells or sections only, not required for paraffin sections): Perform either methanol fixation or formaldehyde fixation depending on the requirements for specific applications. For cultured cells, wash with PBS or HBSS prior to fixation. For cryosections, allow slides to warm to room temperature and proceed directly to fixation.

a. Methanol fixation: Add appropriate amount of pre-chilled methanol to cover the sample. Incubate at -20°C for 10 minutes. Remove methanol and rinse the samples three times with PBS at room temperature.

b. PFA (formaldehyde) fixation: Fix samples on ice with 4% PFA in PBS for 15 minutes. Remove PFA and rinse the samples three times with PBS at room temperature.

2.3 Endogenous peroxidase quenching (optional)

For tissue sections where endogenous peroxidases are a source of background, we recommend treating samples with peroxidase quenching buffer (0.3% H_2O_2 and 0.1% NaN_3 in PBS).

2.3.1 Just before use, prepare peroxidase quenching buffer by adding 500 uL of 30% H_2O_2 and 500 uL of 10% NaN_3 to 49 mL of PBS.

Note: Scale volumes as needed. For tissue sections, make enough solution to submerge slides in a slide jar.

2.3.2 Incubate samples with quenching buffer for 15 minutes at room temperature.

2.3.3 Rinse three times with PBS.

2.4 Endogenous biotin blocking (for biotin detection only)

2.4.1 Incubate samples with unlabeled streptavidin solution for 15 minutes at room temperature.

2.4.2 Wash samples three times with biotin blocking wash buffer for 5 minutes at room temperature for each wash.

2.4.3 Incubate samples with biotin solution for 30 minutes at room temperature to block the extra biotin binding sites on streptavidin.

2.4.4 Wash samples three times with biotin blocking wash buffer for 5 minutes at room temperature for each wash.

3. Blocking and primary antibody binding

Note: Only one primary antibody may be used for each round of tyramide staining. For multiplexing procedures, see step 6 and Figure 1.

3.1 Incubate samples with protein blocking buffer from step 1.4 for 30 minutes or longer at room temperature.

3.2 Dilute the primary antibody in protein blocking buffer. Prepare enough diluted primary antibody to completely cover the sample (100 uL for cells in a 96-well plate or to cover a 2 cm^2 tissue section by a Parafilm® coverslip).

3.3 Add primary antibody to samples. For tissue sections, cover with a piece of Parafilm® to evenly spread the staining solution and prevent evaporation during incubation.

3.4 Incubate samples with primary antibodies at room temperature for 2 hours or 4°C overnight.

3.5 Wash samples three times with PBS for 5 minutes each at room temperature.

4. Secondary antibody binding

4.1 Optional: If you are using a biotinylated secondary antibody, add antibody to samples as described for primary antibody. Incubate at room temperature for 1 hour, then wash three times with PBS for 5 minutes each at room temperature.

4.2 Dilute the HRP conjugate to the concentration recommended by the manufacturer in protein blocking buffer. The recommended concentration of Biotium's HRP labeled secondary antibodies is 5 ug/mL. Add antibody to samples as described for primary antibody. Incubate at room temperature for 1 hour.

4.3 Wash samples three times with PBS for 5 minutes at room temperature for each wash.

5. Tyramide signal amplification

The steps below are for using Tyramide Amplification Buffer Plus (Cat. No. 22029).

5.1 Prepare working amplification buffer by following the steps below. Scale volumes as needed to prepare enough working amplification buffer to completely cover the sample. We recommend 100 uL buffer for cells in a 96-well plate or 1 cm^2 tissue section.

5.1.1 Add 1 uL of 30% hydrogen peroxide to 200 uL of 1X Tyramide Amplification Buffer Plus and mix well to make a 0.15% hydrogen peroxide solution.

5.1.2 Add 1 uL of the 0.15% hydrogen peroxide solution to 100 uL of 1X Tyramide Amplification Buffer Plus, for a final concentration of 0.0015% hydrogen peroxide.

5.1.3 Prepare staining solution by diluting the TyraMax™ Amplification Dye stock solution 1:100 in the working amplification buffer prepared in the previous step.

Note: For manual staining, prepare the staining solution just before use. For automated staining, the staining solution can be stored at room temperature, protected from light, for at least 24 hours.

5.2 Incubate samples with the staining solution for 2-10 minutes at room temperature.

Note: The staining time may need to be optimized for each target and dye combination.

5.3 Rinse samples three times in PBS for 5 minutes at room temperature for each wash.

5.4 If performing TSA for one target, continue to step 7. If performing multiple tyramide reactions for multiplexing, use one of the procedures described in step 6.

6. Optional: Sequential Tyramide Reaction Protocols

Two protocols for sequential tyramide reaction are provided below. See Figure 1 for an overview of the sequential staining workflows. If preferred, other methods for HRP inactivation or antibody stripping may be used if validated in your experimental system.

6.1 Sequential tyramide reaction by peroxidase quenching

Notes:

a. This method allows multiple rounds of staining using primary antibodies from different host species and appropriate secondary HRP conjugates.

b. Because the antibodies remain bound to the sample, two antibodies from the same species cannot be used sequentially, because the antibodies will cross-react.

c. The peroxidase quenching method can be used for cells in wells or tissue sections on slides.

6.1.1 Perform the staining and TSA through step 5.3.

6.1.2 Immediately before use, prepare peroxidase quenching buffer by adding 10 uL of 30% H_2O_2 and 10 uL of 10% NaN_3 to 980 uL of PBS.

a. For cell samples in well plates, prepare enough peroxidase quenching buffer to completely fill the well (no less than 100 uL of peroxidase quenching buffer per sample for cells in a 96-well plate).

b. For tissue sections on slides, scale volumes proportionally to make enough peroxidase quenching buffer to soak the slides in a slide staining jar. For example, add 500 uL of 30% H_2O_2 and 500 uL of 10% NaN_3 to 49 mL PBS.

6.1.3 Incubate the samples with peroxidase quenching buffer for 15 minutes at room temperature.

6.1.4 Rinse samples three times with PBS.

6.1.5 Perform a second round of protein blocking, antibody staining, and tyramide signal amplification, steps 3.1 through 5.3.

6.1.6 Repeat as desired for additional sets of primary and secondary antibodies.

6.1.7 Continue to step 7.

6.2 Sequential tyramide reaction by antibody stripping

Notes:

a. This method allows multiple rounds of staining using primary antibodies from the same species and can be used with tissue sections on slides.

b. After each round of tyramide signal amplification, antibodies are stripped from the sample using the same conditions used for heat-induced antigen retrieval (HIER), leaving the tyramide dyes covalently attached to the tissue.

c. Because antibodies are stripped from the tissue, primary antibodies from the same species can be used for each round of staining without cross-reactivity of HRP-labeled secondary antibody between targets.

d. The heating methods below are not compatible with cells in multiwell plates or chambers.

6.2.1 Choose a heat-induced antigen retrieval (HIER) buffer recommended for the primary antibody to be used for the second round of staining. Biotium's AntiFix™ Universal Antigen Retrieval Buffer is a pH-neutral buffer suitable for use with multiple antigens.

Note: If using Biotium's AntiFix™ Universal Antigen Retrieval Buffer, 10X (Cat. No. 22030), dilute 1:10 in dH_2O before use.

6.2.2 Place the tissue slides in a suitable slide container for HIER (heat/microwave-safe) and fill with the antigen retrieval buffer to cover the samples. Loosely cover the container.

6.2.3 Heat the samples in a slide decloaking chamber according to the manufacturer's protocols. Alternatively, samples can be heated in a microwave or kitchen multi-cooker pot with digital temperature control (e.g., Instant Pot®) as described below.

a. Using a microwave: Leave the slide container uncovered or loosely covered to avoid pressure buildup. Microwave the slides on full power until the buffer comes to a boil. Monitoring the container continuously, continue to prevent boil-over of the buffer. After boiling for 10 minutes, allow the container to cool to room temperature.

b. Using a multi-cooker pot: Place the metal steam rack provided with the cooker inside the pot. Leave the slide container loosely covered to avoid pressure buildup. Place the slide container on the rack, making sure it sits securely to avoid tipping. Fill the pot with water so the level comes halfway up the slide container. Close the pot lid and heat at 98°C for 45 minutes without pressure. After heat treatment is complete, carefully remove the slide container from the hot water in the pot and allow to cool to room temperature.

c. Rinse the samples three times with dH_2O to completely remove the HIER buffer.

6.2.4 Perform a second round of biotin blocking (if using a biotinylated antibody), protein blocking (including biotin blocking, if applicable), antibody staining, and tyramide signal amplification, steps 2.4 through 5.3.

6.2.5 Repeat as desired for additional sets of primary and secondary antibodies.

6.2.6 Continue to step 7.

7. Co-staining, nuclear counterstaining, and mounting

7.1 Optional: If required to quench autofluorescence, treat the tissues with an autofluorescence quencher at this step according to the product protocol. See Considerations for Staining for more information.

7.2 Optional: Stain the sample with directly labeled primary antibodies or other fluorescent probes. If using a fluorescent primary antibody from the same species as a primary antibody from previous steps, it is recommended to perform the antibody stripping protocol first (see step 6.2).

7.3 Optional: Counterstain nuclei. If using 1000X DAPI (Cat. No. 99897-50UL), dilute stock solution 1:1000 in PBS for 1 ug/mL final concentration. Apply to samples for at least 5 minutes, protected from light, then rinse once with PBS.

Note: You may also use a different counterstain such as NucSpot® Nuclear Stains (see Related Products), or mount samples using mounting medium containing nuclear counterstain such as variations of our EverBrite® Mounting Medium (see Related Products).

7.4 Mount samples with mounting medium (optional for cells in wells). For tissue samples on slides, cover with coverslip and seal or cure according to the supplier's instructions.

7.5 The samples are now ready for fluorescence imaging. The excitation and emission maxima for TyraMax™ Dyes are listed on the product page.

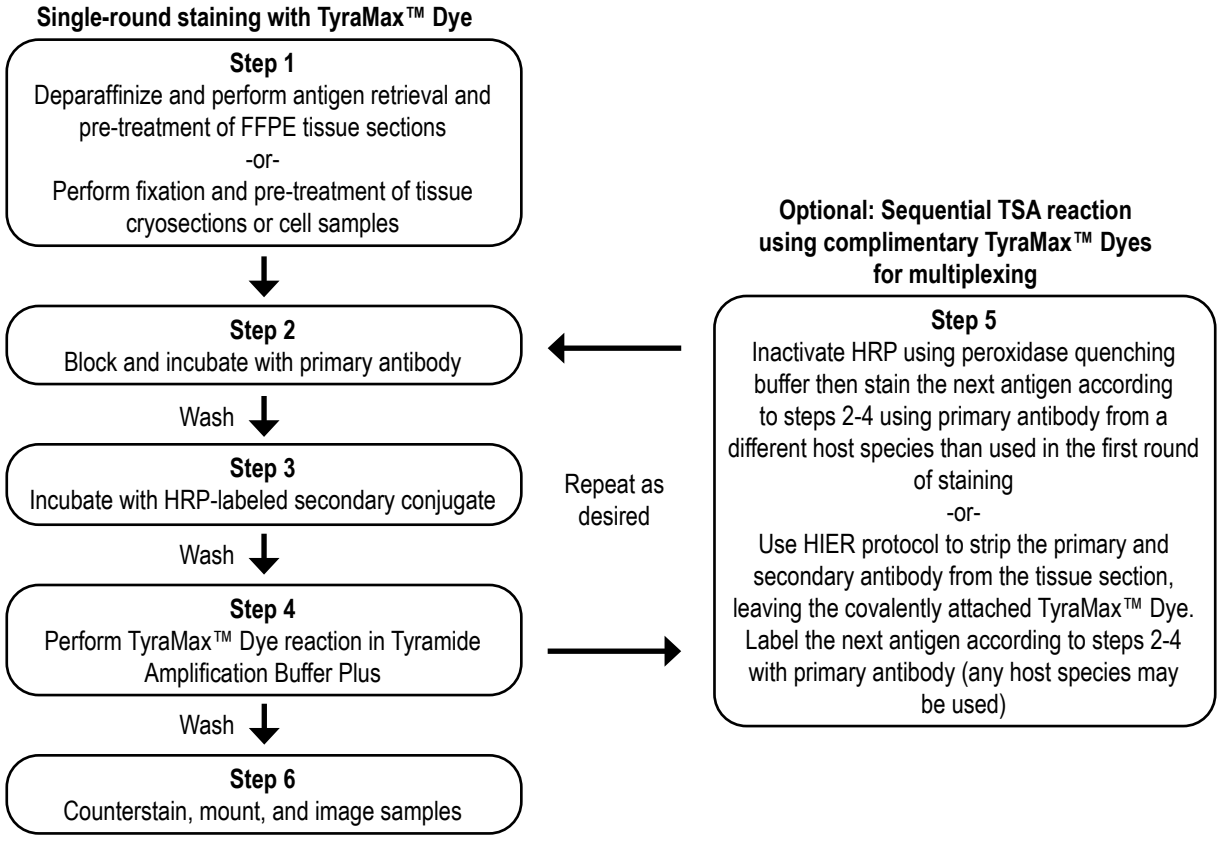

Figure 1. TyraMax™ staining workflows. See Staining Protocols for detailed instructions.

Troubleshooting

Problem	Potential Cause/Diagnosis	Potential Solutions
High background or non-specific staining	Potential cause: Cross-reactivity of secondary antibody with other antibodies or proteins in sample. Diagnosis: Perform staining controls with secondary antibody alone to determine whether the secondary antibody is binding the sample directly. For multiple staining experiments, stain with each primary and secondary combination separately to detect unexpected antibody cross-reactivity.	• Use highly cross-adsorbed secondary antibodies to prevent species cross-reactivity. • When staining rat tissue with anti-mouse secondary antibodies, use antibodies that are highly cross-adsorbed against rat immunoglobulins. • Staining of mouse tissues with anti-mouse antibodies (known as mouse-on-mouse staining) may require special protocols to block binding of endogenous antibodies in the tissue. • Highly charged fluorescent dyes, including CF®405S, Alexa Fluor® 647, or Cy®5.5, can contribute to non-specific binding of directly labeled primary or secondary antibody or other conjugates.
	Potential cause: Fluorescence cross-talk between channels. Diagnosis: For multi-color experiments, perform controls with each stain alone, and image in all channels to determine whether there is fluorescence cross-talk or bleed-through of dye fluorescence between channels.	• Choose dyes that are spectrally well-separated for multi-color imaging. Biotium's Spectra Viewer can be useful for this purpose. • Confocal microscopy imaging settings can be optimized to minimize cross-talk by limiting cross-excitation during scanning, or by changing the emission cut-off for different dyes. • To minimize DAPI fluorescence in the green channel, reduce the concentration of DAPI, or optimize confocal imaging settings to prevent cross-talk. Avoid exposing DAPI to UV excitation before imaging to avoid DAPI photoconversion. Nuclear counterstains for other channels, such as NucSpot® Nuclear Stains (see Related Products), can be used to avoid this problem.
High background or non-specific staining	Potential cause: Antibody concentration is too high. Diagnosis: Both specific signal and background are high.	Perform a titration of antibody concentration to find the optimal concentration for your primary antibody, which can vary widely between antibodies and different sample types. Lower antibody concentration may be optimal for TSA compared to detection with fluorescent secondary antibodies.
	Potential cause: Cell or tissue autofluorescence causing background during microscopy. Autofluorescence is a major and nearly universal source of background in tissue sections, and also is present in some primary cells and pigmented cell types. Diagnosis: Include an unstained control to determine the level of autofluorescence in your sample.	• Cellular autofluorescence is high in blue wavelengths, so avoid using blue fluorescent conjugates for low expressing targets. Autofluorescence may also occur in other channels in certain tissue types. • Use TrueBlack® Lipofuscin Autofluorescence Quenchers (see Related Products) to quench tissue autofluorescence.
	Potential cause: Fuzzy or diffuse signal due to tyramide amplification reaction. Diagnosis: Tyramide signal amplification is localized to the expected cell or tissue structure, but is fuzzier than signal typically seen with fluorescent secondary antibody. Due to the large number of dyes deposited around the target in the tyramide reaction, the signal is expected to be more diffuse than with fluorescent secondary antibody. See Considerations for Staining for more information.	Try titrating down the primary antibody concentration, using a lower concentration of TyraMax™ Dye, or reducing the tyramide reaction time to improve signal crispness.

Troubleshooting (continued)

Problem	Potential Cause/Diagnosis	Potential Solutions
No staining or low signal	Potential cause: Target or epitope not expressed or not accessible for staining. Diagnosis: Check published literature or Human Protein Atlas to verify that the target is expressed in the cell or tissue type of interest. Check the supplier recommendations for the primary antibody to verify that it is validated for immunohistochemistry and that you are using the recommended antigen retrieval method, if applicable.	• If the antibody epitope is intracellular, make sure cells are permeabilized before staining. • Test different fixation methods to find the optimal method for the antigen. • For formalin-fixed tissue, test different antigen retrieval protocols to find the optimal method for the antigen.
	Potential cause: Fluorescence photobleaching during microscopy. Diagnosis: Fluorescence is initially visible but then disappears during imaging.	• Use antifade mounting medium. Limit the exposure of the sample to LED or UV lamp sources prior to imaging. • Reduce the imaging time and increase the gain of the camera or detector to reduce the imaging or exposure time. • Some fluorescent dyes are more photostable than others. Choose photostable dyes for microscopy applications.
	Potential cause: Imaging settings not compatible with the dyes. Diagnosis: Use Biotium's Spectra Viewer to ensure the dye excitation/emission is compatible with your instrument light source and filter.	Use the correct excitation/emission settings for the dyes, or choose dyes that are compatible with your instrument. Note that far-red and near-IR conjugates are not visible to the human eye, and must be imaged using a CCD camera or confocal microscope.
Dim DAPI staining or nuclear background in other channels	Potential cause: Oxidation of DAPI by tyramide amplification buffer. Diagnosis: Tyramide amplification step was done after DAPI staining.	Perform DAPI staining at the end of the TSA protocol, after all tyramide amplification steps are complete.
	Potential cause: DAPI photoconversion or cross-talk between channels.	See our Tech Tip: Avoiding Artifacts from UV Photoconversion of DAPI and Hoechst and troubleshooting tip for cross-talk above.

Related Products

Cat. No.	Product
22029	Tyramide Amplification Buffer Plus
22027	Ready-to-Use Tyramide Amplification Buffer, 1X
22030	AntiFix™ Universal Antigen Retrieval Buffer, 10X
41033... 41041	NucSpot® Nuclear Stains
23007, 23011	TrueBlack® Lipofuscin Autofluorescence Quencher, 20X in DMF or 30X in DMSO
23014	TrueBlack® Plus Lipofuscin Autofluorescence Quencher, 40X in DMSO
20401	Goat Anti-Mouse IgG (H+L), Highly Cross-Adsorbed, HRP Conjugate
20402	Goat Anti-Rabbit IgG (H+L), Highly Cross-Adsorbed, HRP Conjugate
29049	Streptavidin HRP
29073	Wheat Germ Agglutinin (WGA) HRP
29021-29059	CF® Dye Wheat Germ Agglutinin (WGA) Conjugates
00049-00064	CF® Dye Phalloidin Conjugates
00095-00099	ActinBrite™ High Affinity Phalloidin Conjugates
23001, 23002	EverBrite™ Mounting Medium, with or without DAPI
23003... 23016	EverBrite™ Hardset Mounting Medium, with or without DAPI or NucSpot® 640
23017-23019	EverBrite™ TrueBlack Hardset Mounting Medium, with or without DAPI or NucSpot® 640
23005	CoverGrip™ Coverslip Sealant
40043	DAPI, 10 mg/mL in Water
22033	1X PBS (2L) Buffer Powder Packets
22023	Paraformaldehyde, 4% in PBS, Ready-to-Use Fixative
22013	Bovine Serum Albumin Fraction V
22014	Bovine Serum Albumin 30% Solution
22011	Fish Gelatin Powder
22010	10X Fish Gelatin Blocking Agent
22002	Tween® 20

Please visit our website at www.biotium.com for information on our full selection of products featuring bright and photostable CF® Dyes, including primary and secondary antibody conjugates, reactive dyes, bioconjugates, and Mix-n-Stain™ antibody labeling kits.