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NucSpot® Nuclear Stains

Cell membrane-impermeant, nuclear-specific counterstains.
Suitable for fixed cells or staining dead cells in live cultures.



Product Description

NucSpot® Nuclear Stains are cell membrane-impermeant, nuclear-specific counterstains available in a variety of colors from green to near-infrared (near-IR).

- Nuclear-specific counterstains for fixed cells
- Selectively stains dead cells in live culture
- No wash required
- Color options for FITC, Cy®3, PE, Texas Red®, Cy®5, APC, Cy®5.5, and Cy®7 channels

Commonly used blue nuclear stains, such as DAPI and Hoechst, undergo photoconversion after exposure to UV wavelengths and cause cross-talk in other channels. NucSpot® Nuclear Stains were developed to address these photoconversion issues by offering bright and nuclear-specific counterstaining in a wide selection of colors from green to near-IR. The have minimal fluorescence until they bind to DNA and can be used for no-wash nuclear staining. Unlike other nucleic acid dyes such as propidium iodide (PI), TOTO®, TO-PRO®, and similar dyes that stain both the nucleus and cytoplasm, NucSpot® Nuclear Stains selectively stain the nucleus in fixed and permeabilized cells without the need for RNase treatment. NucSpot® Nuclear Stains also can be used for selective staining of dead cells in unfixed cell cultures for analysis by flow cytometry or fluorescence imaging. Several of the dyes can be continuously incubated with cells for multi-day imaging.

Product attributes

Probe cellular localization	Nucleus
For live or fixed cells	For fixed cells
Assay type/options	Live/dead discrimination, Long term staining (24-72h), No-wash staining, Real-time imaging, Tissue staining
Detection method/readout	Fluorescence microscopy, Flow cytometry
Cell permeability	Membrane impermeant
Apoptosis/viability marker	Dead cell stain
Fixation options	Fix before staining (formaldehyde), Fix before staining (methanol), Permeabilize before staining
Colors	Green, Orange, Red, Far-red, Near-infrared
Storage Conditions	Store at 2 to 8 °C

NucSpot® Nuclear Stains

Product	Ex/Em	Detection Channel	Size	Catalog No.
NucSpot® 500/515	497/513 nm	FITC*	20 uL	41040-T
100 uL	41040			
NucSpot® 555/570	559/566 nm	Cy®3 or PE*	20 uL	41033-T
100 uL	41033			
NucSpot® 568/580	572/583 nm	Cy®3 or PE*	20 uL	41036-T
100 uL	41036			
NucSpot® 594/615	603/613 nm	Texas Red® or PE-Texas Red®*	20 uL	41037-T
100 uL	41037			
NucSpot® 650/665	653/671 nm	Cy®5 or APC*	20 uL	41034-T
100 uL	41034			
NucSpot® 680/700	683/707 nm	Cy®5.5*	20 uL	41035-T
100 uL	41035			
NucSpot® 750/780	757/780 nm	Cy®7 or APC-Cy®7*	20 uL	41038-T
100 uL	41038			

* May show crosstalk in lower wavelength detection channels. Perform single-stain controls before combining with other probes.
† NucSpot® Far-Red is designed for flow cytometry optical systems and is not recommended for fluorescence microscopy.

Find the Right Dye for Your Application

Stain Dead Cells in Live Cultures

Exceptional Photostability

NucSpot® Nuclear Stains offer improved photostability over commonly used cyanine-based nuclear stains. The figure below shows how NucSpot® 650/665 is significantly more photostable than Thiazole Red Homodimer (TOTO® -3).

NucSpot® 500/515 is a green fluorescent nuclear stain for the FITC channel. In addition to bright nuclear counterstaining of fixed cells, it can also be used for multi-day live/dead staining of mammalian cells in culture. NucSpot® 500/515 is designed as an improved alternative to NucSpot® 470 which has limited use for cell viability tracking due to its instability in culture medium during long incubation periods.

NucSpot® 555/570 and NucSpot® 568/580 have orange and visible red fluorescence, respectively, and are nuclear-specific alternatives to PI and similar dyes.

NucSpot® 594/615 has deep red fluorescence for the Texas Red® channel.

NucSpot® 650/665 has far-red fluorescence with superior nuclear specificity compared to first-generation far-red nuclear stains such as RedDot™2 and Draq7™.

NucSpot® 680/700 and NucSpot® 750/780 are spectrally unique DNA stains for far-red and near-IR detection.

Biotium also offers NucSpot® Far-Red, a flow cytometry stain developed as an improved alternative to 7-AAD. It shows less bleed-through fluorescence in the PE-Texas Red® channel compared to 7-AAD and is ideal for selective detection of dead cells or DNA content analysis by flow cytometry without RNase treatment.

Learn more about our full selection of Cellular Stains for the nucleus and other organelles.

TOTO and TO-PRO are registered trademarks of Thermo Fisher Scientific; Draq is a trademark of BioStatus Ltd; CY is a registered trademark of Cytiva.

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