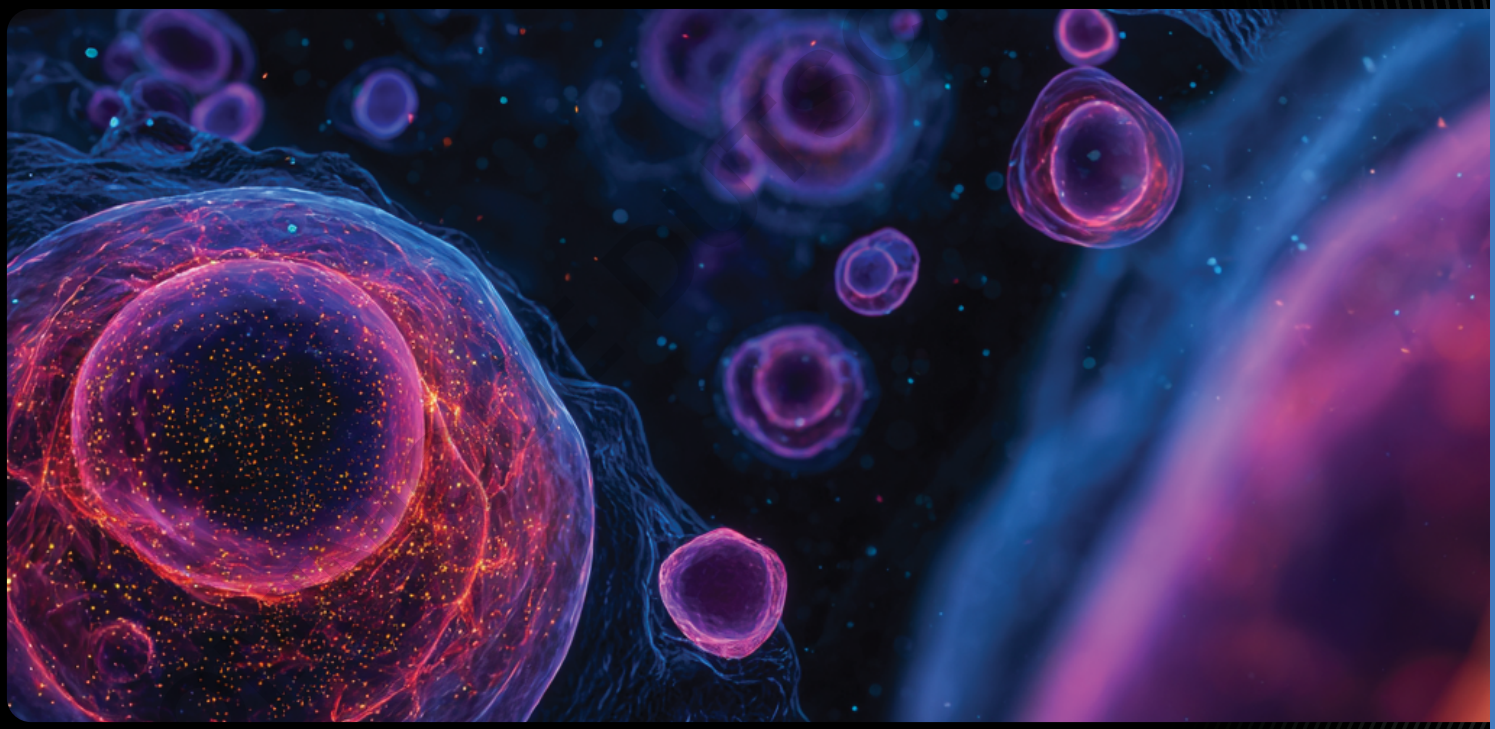
Cellular Stains Selection Guide

for Live and Fixed Cell Staining



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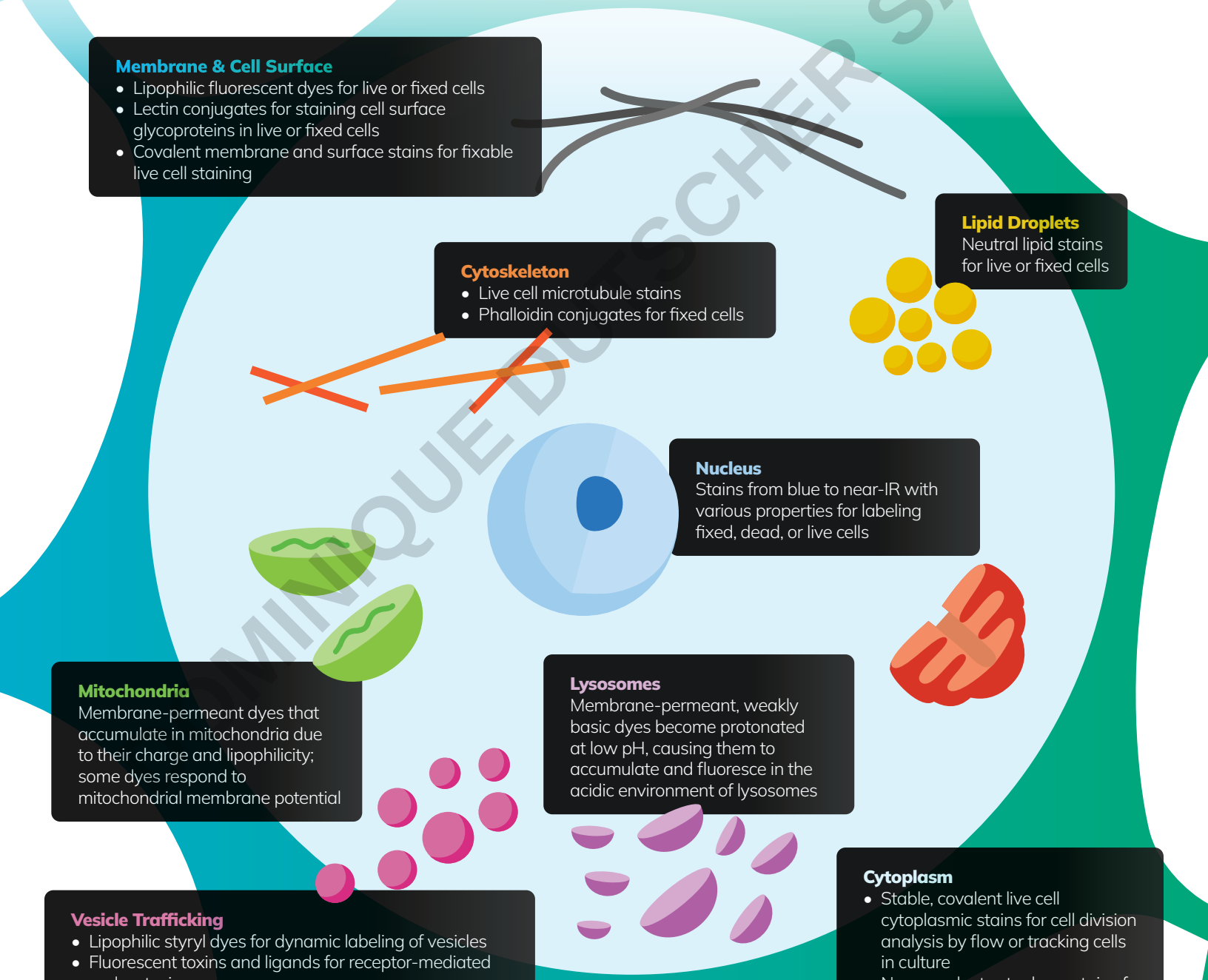
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Find stains that fit your workflow

	Live/intact cell imaging	Stain live cells, then fix	Stain live cells, then fix & permeabilize	Stain fixed cells or tissue sections
Nuclear Stains	• NucSpot® Live Cell Nuclear Stains • RedDot™1 Far-Red Nuclear Stain • Hoechst	• NucSpot® Live Cell Nuclear Stains • Hoechst	• NucSpot® Live Cell Nuclear Stains • Hoechst	• NucSpot® Live Cell Nuclear Stains • NucSpot® Nuclear Stains • RedDot™2 Far-Red Nuclear Stain • Hoechst or DAPI
Membrane/ Cell Surface Stains	• CellBrite® Fix • CellBrite® Steady • MemBrite® Fix • CF® Dye Lectin Conjugates • CF® Dye Cholera Toxin B	• CellBrite® Fix • MemBrite® Fix • CF® Dye Lectin Conjugates • CF® Dye Cholera Toxin B	• CellBrite® Fix • MemBrite® Fix • CF® Dye Lectin Conjugates • CF® Dye Cholera Toxin B	• CytoLiner™ Fixed Cell Membrane Stains • CF® Dye Lectin Conjugates • CF® Dye Cholera Toxin B
Organelle & Cytoskeleton Stains	• ViaFluor® Live Cell Microtubule Stains • MitoView™ Dyes • LysoView® Dyes • LipidSpot® Lipid Droplet Stains	• MitoView™ Green • MitoView™ Fix 640 • LipidSpot® Lipid Droplet Stains	• LipidSpot® Lipid Droplet Stains • MitoView™ Fix 640	• ActinBrite™ High Affinity Phalloidin Stains • CF® Dye Phalloidins • MitoView® Green • mAb Organelle Markers • LipidSpot® Lipid Droplet Stains
Whole Cell/ Cytoplasm	• ViaFluor® SE Cell Proliferation Dyes • Calcein-AM	• ViaFluor® SE Cell Proliferation Dyes	• ViaFluor® SE Cell Proliferation Dyes	• MemBrite® Fix • Live-or-Dye™ Fixable Viability Stains • CF® Dye Succinimidyl Esters
Vesicle & Endocytic Tracking	• CF® Dye Transferrin • CF® Dye Cholera Toxin B • CF® Dye Dextrans • SynaptoRed™/ SynaptoGreen™ (FM® Dyes)	• CF® Dye Transferrin • CF® Dye Cholera Toxin B • CF® Dye Dextrans • AM & HM Nerve Terminal Dyes	• CF® Dye Transferrin • CF® Dye Cholera Toxin B	• mAb Organelle Markers
Apoptotic Cell Stains	• NucView® Caspase-3 Substrates • CF® Dye Annexin V Conjugates • Oxazole Yellow (YO-PRO®-1) • Oxazole Blue (PO-PRO™-1)	• NucView® Caspase-3 Substrates • CF® Dye Annexin V Conjugates	• NucView® Caspase-3 Substrates	• CF® Dye TUNEL Assay
Viability/ Dead Cell Stains	• Live-or-Dye™ Fixable Viability Stains • Live-or-Dye NucFix™ Red • NucSpot® Nuclear Stains	• Live-or-Dye™ Fixable Viability Stains • Live-or-Dye NucFix™ Red	• Live-or-Dye™ Fixable Viability Stains • Live-or-Dye NucFix™ Red	

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Overview of organelle & cytoskeleton stains



Membrane & Cell Surface
- Lipophilic fluorescent dyes for live or fixed cells
- Lectin conjugates for staining cell surface glycoproteins in live or fixed cells
- Covalent membrane and surface stains for fixable live cell staining

Cytoskeleton
- Live cell microtubule stains
- Phalloidin conjugates for fixed cells

Lipid Droplets
Neutral lipid stains for live or fixed cells

Nucleus
Stains from blue to near-IR with various properties for labeling fixed, dead, or live cells

Mitochondria
Membrane-permeant dyes that accumulate in mitochondria due to their charge and lipophilicity; some dyes respond to mitochondrial membrane potential

Lysosomes
Membrane-permeant, weakly basic dyes become protonated at low pH, causing them to accumulate and fluoresce in the acidic environment of lysosomes

Vesicle Trafficking
- Lipophilic styryl dyes for dynamic labeling of vesicles
- Fluorescent toxins and ligands for receptor-mediated endocytosis
- Fluorescent dextrans for fluid phase tracing

Cytoplasm
- Stable, covalent live cell cytoplasmic stains for cell division analysis by flow or tracking cells in culture
- Non-covalent cytoplasm stains for cell viability and dye efflux assays

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Cellular Stains Comparison Guides

Find stains for different applications, cellular targets, and organisms at a glance

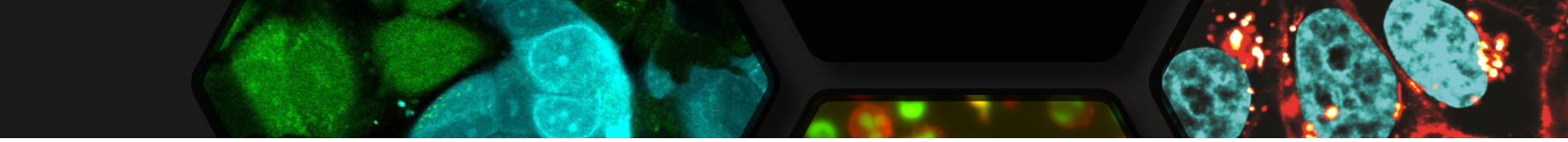
Live Cell Stains

Product	Localization	Fixable	Can perm?[9]	Stains fixed cells	Toxic	Stability[1]	Colors	Applications / Notes
Hoechst	Nucleus	Yes	Yes	Yes	No	Days	Blue	• No-wash, non-toxic, stable for several days
NucSpot® Live Nuclear Stains	Nucleus	Yes	Yes	Yes	No	Days	Green, Far-red	• No-wash, non-toxic for real-time imaging
RedDot™1 Far-Red Nuclear Stain	Nucleus	No	No	No	Yes	< 4 hrs	Far-red	• No-wash nuclear staining (compare to Draq5™) • Toxic after several hours
ViaFluor® Live Cell Microtubule Stains	Microtubules	No	No	No	Low	Days	Blue, Green, Far-red	• No-wash, live cell microtubule stains • Low toxicity, stain for 48 hours or longer
ViaFluor® SE Cell Proliferation Dyes	Cytoplasm	Yes	Yes	No	No	Days	Blue, Green, Far-red	• Stable, whole-cell labeling of live cells • Non-toxic for tracking multiple cell divisions • Excellent choice for cell tracing/co-cultures
Calcein-AM	Cytoplasm & cell viability	No	No	No	No	≤ 24 h	Green	• Short-term, whole-cell labeling of live cells • For cell viability or dye efflux assays
CellBrite® Cytoplasmic Membrane Dyes	Membranes[4]	Yes[2]	No[3]	Yes[2]	No	Days to weeks[4]	8 Colors Blue to Near-IR	• Classic lipophilic dyes used in cell tracing[3]
CellBrite® Fix Membrane Stains	Membrane & cell surface[4]	Yes	Yes	No	No	Days[4]	Green, Red, Far-red	• Covalent membrane labeling • More uniform staining than lipophilic dyes • Stain yeast and bacteria
MemBrite® Fix Cell Surface Stains	Cell surface[4]	Yes	Yes	No	No	Days[4]	12 colors Blue to Near-IR	• Covalent, rapid, and uniform labeling of surface proteins • Stain yeast and gram-positive bacteria
CellBrite® Steady Membrane Staining Kits	Cell membranes	No	No	No	No	Days	7 colors Blue to Near-IR	• Long-term cell surface labeling • STORM-compatible options available
LipidSpot™ Lipid Droplet Stains	Lipid droplets	Yes[2]	Yes	Yes[2]	No	Days	Green, Red/ Far-red	• Neutral lipid droplet stains • Fix/permeabilize before or after staining[2]
SynaptoGreen™ & SynaptoRed™ Nerve Terminal Dyes	Membranes & synaptic vesicles	Yes[6]	Yes[6]	No	No	Minutes to hours	Green, Red	• Cationic styryl dyes for tracking endocytic vesicles • Dye options with fixable amine group • Equivalent to FM® dyes
CF® Dye Cholera Toxin Conjugates	Lipid rafts	Yes	Yes	Yes	No	≤ 24 h	6 colors[8] Green to Near-IR	• Binds GM1 ganglioside in lipid rafts • For cell surface labeling or neuronal tracing • Staining can be heterogeneous in cultured cells
CF® Dye Transferrin Conjugates	Endocytic tracer	Yes	Yes	No	No	≤ 24 h	7 colors[8] Green to Near-IR	• Transferrin receptor ligand • Traffics to recycling endosomes
CF® Dye Dextrans	Fluid phase tracer	Yes	No	No	No	≤ 24 h	Wide selection[8] Green to Near-IR	• For fluid phase endocytosis or permeability tracing • Available with a range of molecular weights
CF® Dye Lectin Conjugates	Cell surface glycoproteins[5]	Yes	Yes	Yes	Possibly	≤ 24 h	Wide selection[8] UV to Near-IR	• WGA, Con A, PNA, LEL, UEA I, PHA-L, DSL, and SNA • Lectins that bind to cell surface glycoproteins[4,5] • Staining and biological effects vary by cell type • Also see Stains for Mammalian Cells, Bacteria, & Yeast
LysoView™ Dyes	Lysosomes	No	No	No	No	Days	9 colors Blue to Near-IR	• No wash, live cell staining of lysosomes
MitoView™ Dyes	Mitochondria & cell viability	No[7]	No	No[7]	No	Days	Blue, Green, Far-red, Near-IR	• No wash, live cell staining of mitochondria • MitoView™ 633 is responsive to mitochondrial potential
MitoView™ Fix 640	Mitochondria & cell viability	Yes	Yes	No	No	Days	Far-red	• Fixable mitochondrial stain • No wash, non-toxic, stable live cell staining
Aquaphile™ JC-1	Mitochondria & cell viability	No	No	No	No	Days	Green, Red	• Stains cytoplasm green, healthy mitochondria red • Ratiometric mitochondrial membrane potential dye
Rhodamine 123, TMRM, TMRE	Mitochondria & cell viability	No	No	No	No	Days	Green, Red	• Preferred dyes for quantitative mitochondrial membrane potential measurement

1. Stability of staining is a general guideline only, actual stability may depend on cell type/experimental system.
2. Formaldehyde fixation only, does not tolerate alcohol/solvent treatment.
3. Dyes have poor tolerance for detergent, but cells can be stained after fixation with good results.
4. Surface staining is internalized by endocytosis, becoming mostly intracellular after several hours.
5. In fixed cells, lectins also stain intracellular glycoproteins in the ER/Golgi.
6. HM and AM dye options have formaldehyde-fixable amine groups and can be used with a low-detergent permeabilization protocol.
7. Cells can be fixed before or after MitoView™ Green staining, but dye localization will not be as specific as in live cells. We recommend mitochondrial marker antibodies for fixed cell staining.
8. We regularly add new CF® Dye options for bioconjugates on request; contact techsupport@biotium.com to inquire.
9. Short for permeabilize by detergent.

Please visit www.biotium.com/spectra-viewer to visualize the excitation and emission spectra of our products.

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Nuclear Stains

Product	Stains live cells	Fix after staining	Permeabilize after staining	Fix before staining	Non-toxic	Colors	Applications / Notes
Hoechst	Yes	Yes	Yes	Yes	Yes	Blue	• No-wash, non-toxic, stable for several days
DAPI	No	No	No	Yes	Yes	Blue	• Can use DAPI in antifade mounting medium
Thiazole Green (SYBR® Green)	Yes	No[1]	No[1]	No[1]	No	Green	• Structurally identical to SYBR® Green
Live-or-Dye NucFix™ Red	Dead cell-selective	Yes	Yes	No	Yes	Red	• Excellent tolerance for fixation/permeabilization • Washing required before/after staining
NucSpot® Nuclear Stains	Dead cell-selective	No	No	Yes	Yes	7 colors, Green to Near-IR	• Avoids crosstalk from DAPI/Hoechst photoconversion • Also selectively stains dead cells in live cultures
NucSpot® Live Nuclear Stains	Yes	Yes	Yes	Yes	Yes	Green, Far-red	• Nuclear-specific far-red staining in live or fixed cells • No-wash, non-toxic for real-time imaging
RedDot™1 Far-Red Nuclear Stain	Yes	No	No	No	No	Far-red	• No-wash nuclear staining of live cells (compare to Draq5™) • Toxic after several hours, for end-point assay only
RedDot™2 Far-Red Nuclear Stain	Dead cell-selective	No	No	Yes	Yes	Far-red	• Far-red fluorescent nuclear counterstain or dead cell stain • Compare to Draq7™
Propidium Iodide (PI)	Dead cell-selective	No	No	No[1]	Yes	Red	• Not nuclear-specific in fixed cells without RNase digestion

1. Not nuclear-specific in fixed cells.

Stains for Spheroids, Matrigel®, & 3D Cultures

Product	Target	Color	Applications / Notes
Hoechst	All cell nuclei	Blue	• See Nuclear Stains
NucSpot® Live Nuclear Stains	All cell nuclei	Green, Far-red	• See Live Cell Stains
Live-or-Dye NucFix™ Red	Dead cell nuclei	Red	• See Dead Cell & Apoptosis Stains
CellBrite® Steady Membrane Dyes	Cell membranes	5 colors, Blue to Near-IR	• See Live Cell Stains
LipidSpot™ Lipid Droplet Stains	Lipid droplets	Green, Red/Far-Red	• See Live Cell Stains
LysoView™ Dyes	Lysosomes	9 colors, Blue to Near-IR	• See Live Cell Stains
MitoView™ 633	Mitochondria	Far-red[1]	• See Live Cell Stains
NucView® 488 Caspase-3 Substrate	Apoptotic cells	Green	• See Dead Cell & Apoptosis Stains; tolerates fixation and optical clearing
Calcein-AM	Viable cells (whole cell stain)	Green	• See Live Cell Stains; commonly used to stain cells in Matrigel® and spheroids
ViaFluor® SE Cell Proliferation Dyes	Live cells	Blue, Green, Far-red	• See Live Cell Stains; typically used to label cells before seeding in Matrigel®

1. Polarized mitochondria; also has visible red fluorescence in the Cy®3 channel and is not recommended for use with other red dyes.

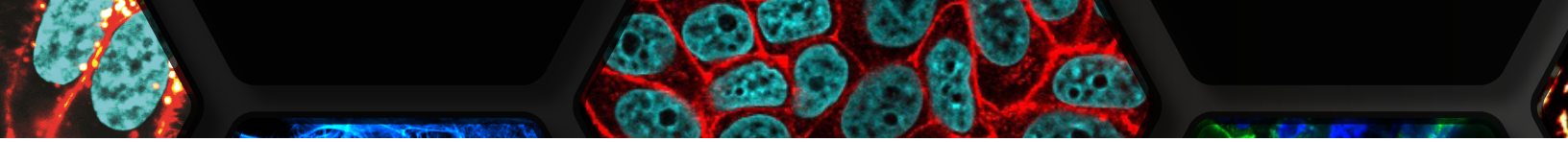
Stains for Fixed Cells & Tissue Sections

Product	Target	Also stains live cells?	Color	Applications / Notes
CF® Dye Phalloidins	F-actin	No	Wide selection[3], UV to Near-IR	• Widely used actin filament stain for fixed/permeabilized cells[1]
ActinBrite™ High Affinity Phalloidin Conjugates	F-actin	No	5 colors, Green to Far-red	• Novel actin filament stain for fixed/permeabilized cells[1] • More stable binding so samples can be stored before imaging
CF® Dye Bungarotoxin Conjugates	Nicotinic acetylcholine receptor	Yes	Wide selection[3], UV to Near-IR	• Labels neuromuscular junctions
NucSpot® Nuclear Stains	Nuclei	Yes[4]	7 colors, Green to Near-IR	• Nuclear-specific counterstain for fixed/permeabilized cells
CytoLiner™ Fixed Cell Membrane Stains	Cell membranes	No	6 colors, Blue to Near-IR	• Lipophilic dyes for stable, non-toxic membrane labeling • Fix before labeling[1,2]
LipidSpot™ Lipid Droplet Stains	Lipid droplets	Yes	Green, Red/Far-red	• Neutral lipid droplet stains • Fix/permeabilize before or after staining[1]
CF® Dye Lectin Conjugates	Glycoproteins	Yes	Wide selection[3], UV to Near-IR	• WGA, Con A, PNA, LEL, UEA I, PHA-L, DSL, and SNA • Bind to cell surface glycoproteins, staining varies by cell/tissue type • May stain intracellular targets in permeabilized cells
CF® Dye Cholera Toxin Conjugates	GM1 ganglioside in lipid rafts	Yes	6 colors[3], Green to Near-IR	• For cell surface labeling or neuronal tracing • Expression/staining can be heterogeneous in cultured cells
Organelle marker antibodies	Mitochondria, nuclear envelope, nucleoli, Golgi, and more	No	Wide selection[3], Blue to Near-IR	• Best options for staining organelles in fixed cells • Visit www.biotium.com to see our CF® Dye-labeled primary antibodies
MitoView™ Green	Mitochondria	Yes	Green	• Can stain fixed cells if suitable mitochondria antibody not available[1] • Fixed cell staining not as specific as live cell staining

1. Formaldehyde fixation only, does not tolerate alcohol/solvent treatment.
2. Dyes have poor tolerance for detergent, but cells can be stained after fixation/permeabilization with good results.
3. We regularly add new CF® Dye options for bioconjugates on request; contact techsupport@biotium.com to inquire.
4. Selectively stains dead cells in live culture.

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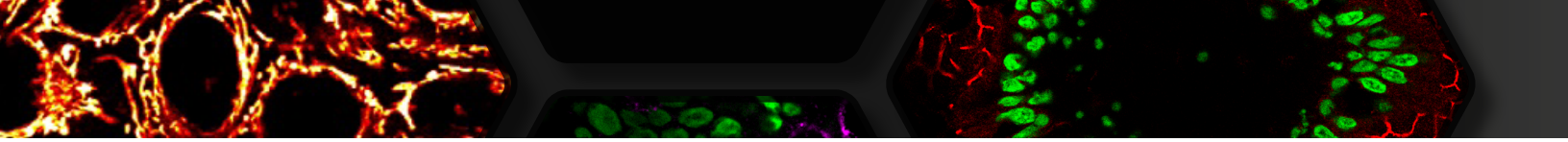
Dead Cell & Apoptosis Stains

Product	Target[1]	Nuclear-specific	Fix after staining	Permeabilize after staining	Color	Applications / Notes
NucView® Caspase-3 Substrates	Apoptotic cells Caspase activity	Yes	Yes	Yes	Blue (429/469 nm)[2] Green (500/530 nm)[2] Orange (528/563 nm)[2]	• Detect caspase-3 activity in intact cells • No-wash staining for endpoint or real-time analysis • NucView® 488 validated in >100 cell types & 200+ papers
CF® Dye Annexin Conjugates	Apoptotic cells Phosphatidylserine	No	Yes	No	Wide selection UV to Near-IR	• Annexin V with CF® Dyes & other labels • Available preservative-free for real-time cell imaging
Live-or-Dye™ Fixable Viability Stains	Necrotic cells (cytoplasm) Cell-impermeant reactive dyes	No	Yes	Yes	16 Colors UV to Near-IR	• Excellent tolerance for fixation/permeabilization • Washing required before/after staining
Live-or-Dye NucFix™ Red	Necrotic cells Cell-impermeant DNA/RNA dye	Yes[3]	Yes	Yes	Red (520/593 nm)[2]	• Covalent, red fluorescent dead cell nuclear stain • The only fixable dead cell nuclear stain • Wash after staining required
NucSpot® Nuclear Stains	Necrotic cells Cell-impermeant DNA dye	Yes	No	No	7 Colors Green to Near-IR	• Nuclear counterstains or dead cell stains • No-wash staining, compatible with real-time imaging • NucSpot® 470 can be used for cell cycle profiling
NucSpot® Far-Red	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Far-red (597/667 nm)[2]	• For flow cytometry in the PE-Cy®5 or APC channel • Less bleed into the PE-Texas Red® channel than 7-AAD • Can be used for cell cycle profiling
RedDot™2 Far-Red Nuclear Stain	Necrotic cells Cell-impermeant DNA/RNA dye	Yes	No	No	Far-red (665/695 nm)[2]	• Compare to Draq7™ • No-wash staining, compatible with real-time imaging
CF® Dye TUNEL Assay	Apoptotic cells DNA strand breaks	Yes	N/A	N/A	Green, Red, Far-red	• Excellent tolerance for fixation/permeabilization • Washing required before/after staining
Oxazole Blue (PO-PRO™-1)	Necrotic and apoptotic cells Cell-impermeant DNA/RNA dye	No	No	No	Blue (435/455 nm)[2]	• Equivalent to PO-PRO™-1 Iodide • No-wash staining, compatible with real-time imaging
Oxazole Blue Homodimer (POPO™-1)	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Blue (435/455 nm)[2]	• Equivalent to POPO™-1 Iodide • No-wash staining, compatible with real-time imaging
Oxazole Yellow (YO-PRO®-1)	Early apoptotic cells Cell-impermeant DNA/RNA dye	No	No	No	Green (491/509 nm)[2]	• Equivalent to YO-PRO®-1 Iodide • Reported to selectively stain early apoptotic cells • No-wash staining, compatible with real-time imaging
Oxazole Yellow Homodimer (YOYO®-1)	Early apoptotic cells Cell-impermeant DNA/RNA dye	No	No	No	Green (491/509 nm)[2]	• Equivalent to YOYO®-1 Iodide • Reported to selectively stain early apoptotic cells • No-wash staining, compatible with real-time imaging
TO Iodide (TO-PRO®-1)	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Green (515/531 nm)[2]	• Equivalent to TO-PRO®-1 Iodide • No-wash staining, compatible with real-time imaging
Thiazole Orange Homodimer (TOTO®-1)	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Green (520/541 nm)[2]	• Equivalent to TOTO®-1 Iodide • No-wash staining, compatible with real-time imaging
Ethidium Homodimer III (EthD-III)	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Red (522/593 nm)[2]	• Developed at Biotium as an alternative to EthD-I • 45% brighter than EthD-I when bound to DNA
Ethidium Homodimer I (EthD-I)	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Red (528/617 nm)[2]	• High-affinity membrane-impermeant DNA/RNA stain • >30-fold fluorescence enhancement upon binding DNA
Propidium Iodide (PI)	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Red (535/617 nm)[2]	• Can be excited at 488 nm for the PE channel • Useful for cell cycle analysis in fixed cells (with RNase)
7-AAD	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Far-red (546/647 nm)[2]	• Far-red dye for the PE-Cy®5 flow cytometry channel • Useful for cell cycle analysis in fixed cells
Thiazole Red (TO-PRO®-3)	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Far-red (642/661 nm)[2]	• Equivalent to TO-PRO®-1 Iodide • No-wash staining, compatible with real-time imaging
Thiazole Red Homodimer (TOTO®-3)	Necrotic cells Cell-impermeant DNA/RNA dye	No	No	No	Far-red (642/660 nm)[2]	• Equivalent to TOTO®-3 Iodide • No-wash staining, compatible with real-time imaging
PathoGreen™ Histofluorescent Stain	Degenerating neurons	No	N/A	N/A	Green (497/520 nm)	• For fixed neuronal cells & tissue sections

1. Necrotic cell stains also stain late apoptotic cells with leaky cell membranes; in fixed cells DNA/RNA dyes are not dead cell-selective and stain both nucleus and cytoplasm.
2. With DNA.
3. Shows nuclear staining in dead cells; stains nucleus and cytoplasm in fixed cells.

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Stains for Mammalian Cells, Bacteria, & Yeast

Target	Product	Mammalian cells	Yeast	Gram+ bacteria	Gram- bacteria	Applications / Notes
Membrane & Cell Surface	CytoLiner™ Fixed Cell Membrane Stains	Yes	Yes	No	No	• See Live Cell Stains, and Stains for Fixed Cells & Tissue Sections
	CellBrite® Steady Membrane Dyes	Yes	No	No	No	
	CellBrite® Fix Membrane Stains	Yes	Yes	Yes	Yes	
	MemBrite® Fix Cell Surface Stains	Yes	Yes	Yes	No	
	Wheat Germ Agglutinin (WGA)	Yes	Yes[1]	Yes	No	
	Concanavalin A (Con A)	Yes	Yes	No	No	
	SynaptoGreen™ C4 (FM®1-43)	Yes	Yes[2]	Yes	Yes	
	SynaptoRed™ C2 (FM®4-64)	Yes	Yes[2]	Yes	Yes	
	BactoSpore™ Bacterial Stains	Yes[3]	Yes[4]	Yes	Yes	• Green membrane stain (Ex/Em 484/504 nm) and yellow nucleic acid stain (Ex/Em 488/536 nm with DNA) • Optimized for endospores, also stains live and dead bacteria
	Calcofluor White	No	Yes	Yes	No	• Blue fluorescent fungi cell wall stain (Ex/Em 360/430 nm)
Live Cell DNA/ RNA	NucSpot® Live Cell Nuclear Stains	Yes	No	Yes	No	• See Nuclear Stains
	RedDot™1 Far-Red Nuclear Stain	Yes	No	Yes	Yes	
	Hoechst Dyes	Yes	No[5]	Yes	Yes	
	DAPI	Yes	No[5]	Yes	Yes	
	BactoView™ Live Dyes	Yes[6]	No[5]	Yes	Yes	• BactoView™ Green (Ex/Em 500/520 nm) • BactoView™ Red (Ex/Em 572/675 nm) • Stains live and dead bacterial DNA
	DMAO	Yes[7]	No[5]	Yes	Yes	• Green fluorescent DNA stain (Ex/Em 496/528 nm) • Stains live and dead bacteria
	Thiazole Orange	Yes	Yes[8]	Yes	Yes	• Green fluorescent RNA/DNA stain (Ex/Em 512/533 nm) • Stains yeast cell nucleus
Dead Cells	BactoView™ Dead Stains	Yes	Yes	Yes[9]	Yes[9]	• See Dead Cell & Apoptosis Stains
	NucSpot® Nuclear Stains	Yes	Yes	No[11]	Yes	
	Live-or-Dye NucFix™ Red	Yes	Yes[10]	No[11]	Yes	
	Live-or-Dye™ Fixable Viability Dyes	Yes	Yes	Yes	Yes	
	RedDot™2 Far-Red Nuclear Stain	Yes	No	Yes	Yes	
	Propidium Iodide (PI)	Yes	Yes	Yes[12]	Yes	
	Ethidium Homodimer I (EthD-I)	Yes	Yes	Yes[12]	Yes	
	Ethidium Homodimer III (EthD-III)	Yes	Yes	Yes[12]	Yes	
Organelles & Cytoskeleton	MitoView™ Dyes	Yes	Yes	Yes	Yes	• See Live Cell Stains
	LysoView™ Dyes	Yes	No	No	No	
	LipidSpot™ Lipid Droplet Stain	Yes	No	No	No	
	CF® Dye Phalloidins	Yes	Yes	No	No	• See Stains for Fixed Cells & Tissue Sections
	ActinBrite™ High Affinity Phalloidin Conjugates	Yes	Yes	No	No	• See Stains for Fixed Cells & Tissue Sections
	ViaVac™ Red/Green	No[13]	Yes	No data	No data	• Stains vacuoles in healthy yeast red, stains cytoplasm green • Ex/Em ~485/530 nm (green); ~485/620 nm (red)
Cytoplasm	ViaFluor® SE Cell Proliferation Dyes	Yes	No	Yes	No	• See Live Cell Stains

1. Stains bud scars of budding yeast.
2. Internalizes to vacuolar membranes.
3. BactoSpore™ Nuclear Dye stains nucleus and cytoplasm, and BactoSpore™ Membrane Dye stains intracellular membranes.
4. BactoSpore™ 485/500 can stain yeast, but it will also stain intracellular membranes.
5. Weak staining and not nuclear.
6. BactoView™ Red shows weak mitochondrial staining, BactoView™ Green stains nucleus and cytoplasm.
7. Staining is not nuclear.
8. Staining is both nuclear and cytoplasmic.
9. BactoView™ Dead shows excellent live/dead discrimination for both gram+ and gram- strains.
10. Dead cell specific but not nuclear.
11. Stains live and dead cells.
12. Not recommended for gram+ strains because it shows poor live/dead discrimination.
13. Weak mitochondrial staining at high dye concentrations.

The table above lists the application of several cellular stains for various organisms. A "Yes" indicates the stain is validated for the organism and may be used for reliable analysis. A "No" indicates that we do not recommend this stain for that organism; however some staining may still occur.

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About Us

At Biotium, we are dedicated to developing cutting-edge fluorescent solutions for life science research. Our efforts have resulted in a growing number of unique and industry-leading fluorescence-based technologies for a wide array of biological research applications. Our products are available in the U.S. through our website, and worldwide through our extensive network of domestic and international distributors.

We license our technologies to a number of international biotechnology companies, and collaborate with academic laboratories to develop tools for the constantly evolving research community. We welcome inquiries about licensing the use of our dyes, technologies, or trademarks.

Biotium implements a Quality System, certified by QAS according to Standard QAS ISO 9001:2015.

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