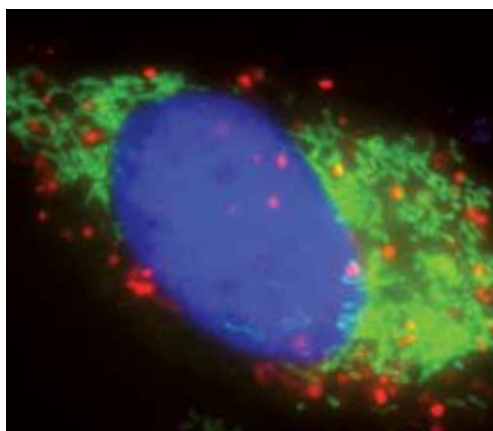


# BacMam technology for subcellular imaging

BacMam technology uses a noninfectious insect virus (baculovirus) designed for highly efficient, reproducible, and noncytotoxic DNA delivery to a range of cell types, including primary and stem cells. Organelle Lights™ and Cellular Lights™ reagents are baculoviruses engineered with coding sequences for fluorescent proteins that are targeted to specific subcellular structures. The protein constructs in Organelle Lights™ reagents include signal peptides for specific targeting to organelles or other subcellular compartments. Cellular Lights™ reagents are constructs of proteins involved in important cellular processes that have been fused to a fluorescent protein.

Both Organelle Lights™ and Cellular Lights™ reagents are:

- Ideal for multiplexing with other fluorescent proteins, fluorescent dyes, or Qdot® nanocrystal conjugates
- Useful for the study of dynamic cellular processes, for colocalization experiments, and for precise spatial and temporal resolution
- Ready to use, so you don't need to purify plasmids or worry about vector integrity and quality
- Prepackaged at a constant concentration, so there's no need to prepare transfection complexes for each experiment
- Delivered without the need for lipids, dye-loading chemicals, or other potentially harmful treatments



**Multiplex analysis with Organelle Lights™ Mito-GFP and LysoTracker® Red DND-99.** U-2OS cells were transduced with green-fluorescent Organelle Lights™ Mito-GFP and then stained with red-fluorescent LysoTracker® Red DND-99, which selectively labels acidic organelles. Following nuclear counterstaining with blue-fluorescent Hoechst 33342, cells were imaged in live-cell format using a 63x objective.



For more than 30 years, **MOLECULAR PROBES®** has developed fluorescence technology that enables uniquely powerful labeling and detection solutions for cellular analysis. Their innovations have led to proprietary technologies that significantly advance assay sensitivity and specificity, opening research avenues that were previously impractical or impossible.

 **invitrogen™**

**MOLECULAR PROBES®**

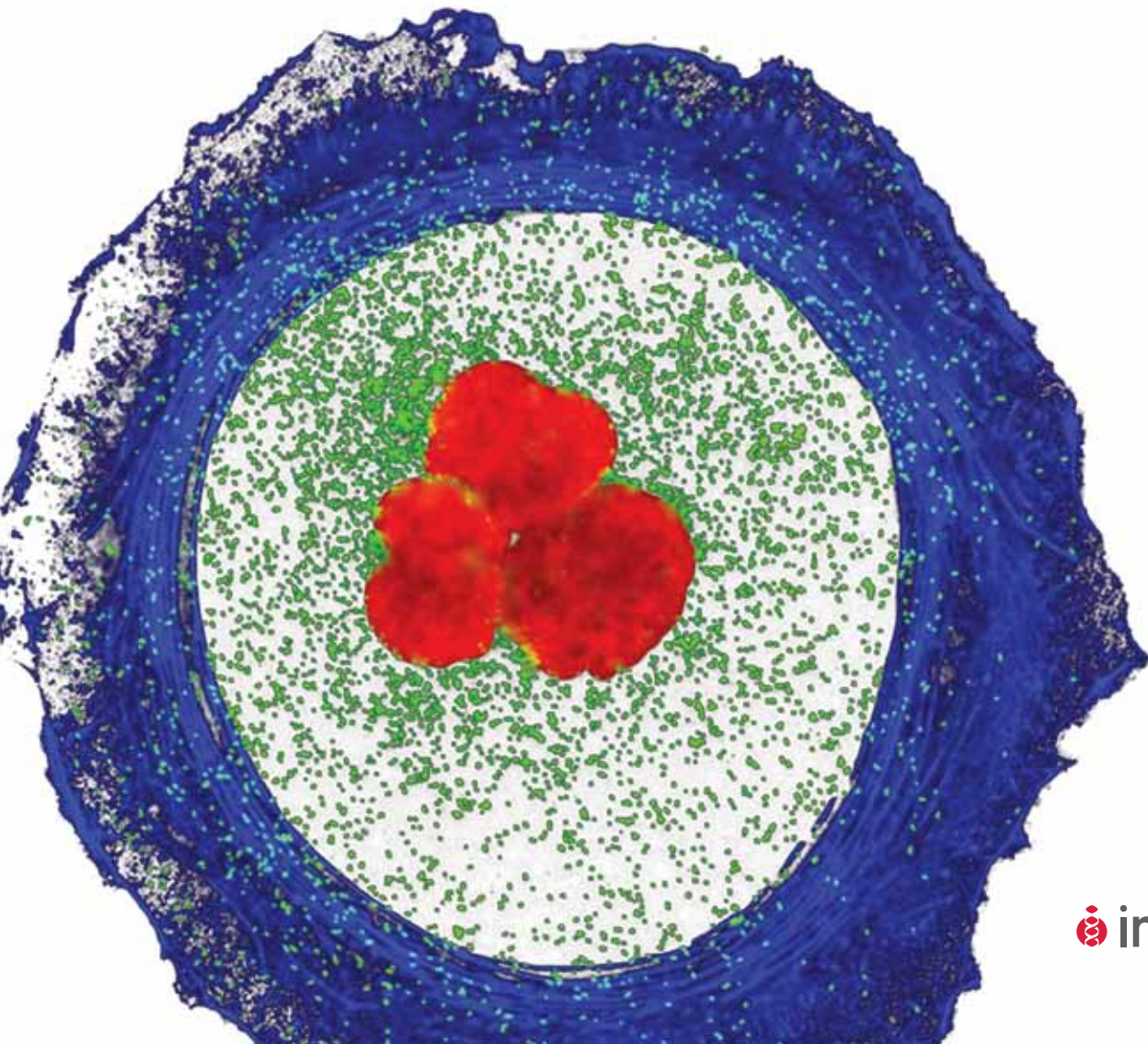
[www.invitrogen.com](http://www.invitrogen.com)

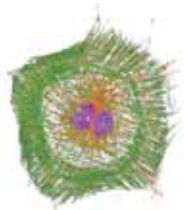
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# Invitrogen™ Molecular Probes® organelle stains

Fluorescent label selection guide



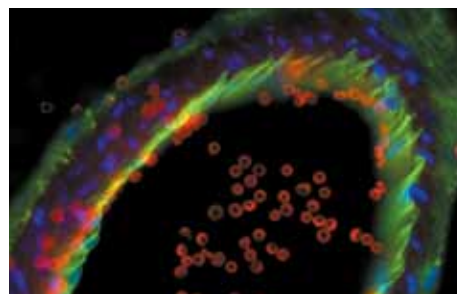
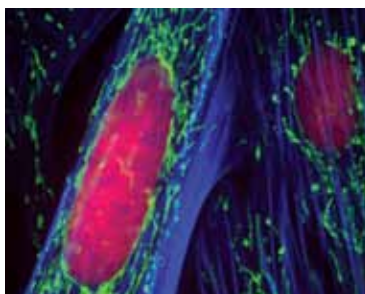
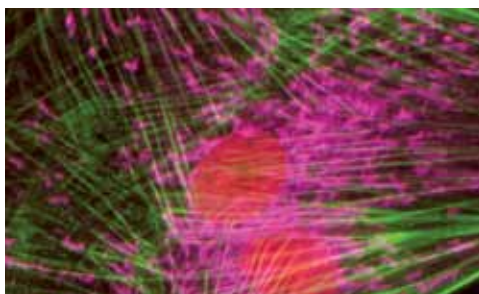
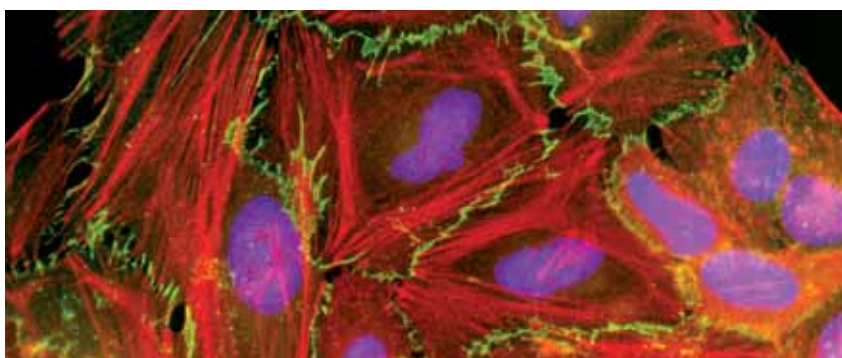
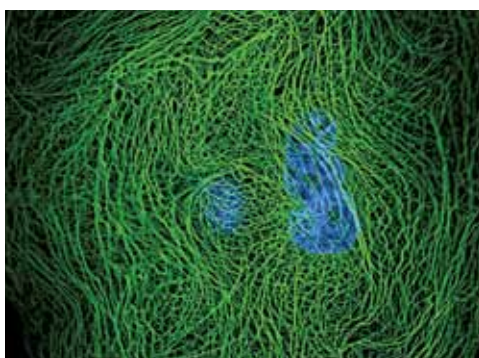


## Labeling and Detection Technologies

Invitrogen™ Molecular Probes® products and services deliver:

- Expertise in fluorescence imaging
- A large selection of stains to meet your specific needs
- Useful protocols and world-class technical support

For a comprehensive list of organelle-staining reagents, protocols, and references, visit [www.invitrogen.com/cellularimaging](http://www.invitrogen.com/cellularimaging).



### Online protocols

Get more information out of your experiments. You, too, can create knockout images with our targeted Organelle Lights™ fluorescent proteins and bright photostable dyes available in multiple colors. Visit our Art of Imaging web area, [www.invitrogen.com/artofimaging](http://www.invitrogen.com/artofimaging), for detailed protocols behind selected images.

### World-class technical support

We're here to help. Invitrogen's Technical Support team was voted #1 by the life science industry. Call our experts for help with product selection, protocol optimization, and troubleshooting.

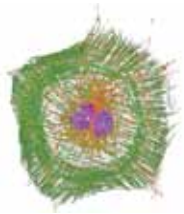
For online technical support, visit [www.invitrogen.com/support](http://www.invitrogen.com/support).

Product	Emission color*	Cat. no.	Ex/Em †	Live ‡	Fixed §
<b>Cytoskeleton</b>					
Anti- $\alpha$ -Tubulin (detection with an Alexa Fluor® dye-labeled secondary antibody)	NA	A11126	NA		•
Alexa Fluor® 350 Phalloidin		A22281	346/442		•
Alexa Fluor® 488 Phalloidin		A12379	495/519		•
Alexa Fluor® 555 Phalloidin		A34055	555/565		•
Alexa Fluor® 594 Phalloidin		A12381	581/609		•
Alexa Fluor® 635 Phalloidin		A34054	633/647		•
Alexa Fluor® 647 Phalloidin		A22287	650/668		•
Alexa Fluor® 680 Phalloidin		A22286	679/702		•
Cellular Lights™ Actin-GFP		C10126	488/510	•	
Cellular Lights™ Actin-RFP		C10127	555/584	•	
Cellular Lights™ Talin-GFP		C10323	488/510	•	
Cellular Lights™ Talin-RFP		C10324	555/584	•	
Cellular Lights™ Tubulin-GFP		C10106	488/510	•	
Cellular Lights™ Tubulin-RFP		C10112	555/584	•	
Cellular Lights™ MAP4-GFP		C10105	488/510	•	
Cellular Lights™ MAP4-RFP		C10140	555/584	•	
Rhodamine Phalloidin		R415	540/565	•	•
TubulinTracker™ Green		T34075	494/522	•	
<b>Nucleus</b>					
7-AAD		A1310	546/647		•
Cellular Lights™ Histone 2B-GFP		C10128	488/510	•	
Cellular Lights™ Histone 2B-RFP		C10129	555/584	•	
DAPI		D1306	358/461		•
Ethidium Homodimer 1		E1169	528/617		•
Hoechst 33342		H1399, H3570	350/461	•	•
Organelle Lights™ Nuc-CFP		O36218	435/485	•	
Organelle Lights™ Nuc-GFP		O36209	485/520	•	
Organelle Lights™ Nuc-RFP		O10099	555/584	•	
Propidium Iodide		P3566	530/625		•
SelectFX® Nuclear Labeling Kit, for fixed cells (DAPI, SYTOX® Green, 7-AAD, TO-PRO®-3 Iodide)	Several	S33025	Several		
SYTO® 9 Green Fluorescent Nucleic Acid Stain		S34854	483/503	•	•
SYTO® 14 Green Fluorescent Nucleic Acid Stain		S7576	517/549 (DNA), 521/547 (RNA)	•	•
SYTO® 82 Orange Fluorescent Nucleic Acid Stain		S11363	541/560	•	•
SYTO® 59 Red Fluorescent Nucleic Acid Stain		S11341	622/645	•	•
SYTO® 61 Red Fluorescent Nucleic Acid Stain		S11343	628/645	•	•
SYTOX® Green Nucleic Acid Stain		S7020	504/523		•
SYTOX® Orange Nucleic Acid Stain		S11368	547/570		•
TO-PRO®-3 Iodide		T3605	642/661		•

\* Gray represents fluorescence emission that is beyond the limit of human vision. † Ex/Em = Fluorescence excitation and emission maxima in nm. ‡ Stains live cells. § Stains fixed cells. \*\* Staining pattern is fixable. †† Va

Fixable**	Key attributes	
	Mouse monoclonal antibody for the visualization of microtubules in fixed cells or fixed/frozen tissue; option of using unlabeled antibody or biotin conjugate with streptavidin conjugates	
•	Alexa Fluor® dye–labeled phalloidins bind to F-actin in nanomolar concentrations and show equal affinity for large and small filaments; live-cell staining requires liposome delivery or microinjection of conjugates, compromised membranes, or unlabeled phalloidins; contrast between stained and unstained areas is extremely large; phalloidin-labeled actin remains functional	
•		
•		
•		
•		
•		
• (paraformaldehyde)	Fusions of fluorescent proteins to the N-terminus of β-actin in mammalian cells; allow visualization of cytoskeletal components in live cells or cytoskeletal rearrangements in high-content screening (HCS) cytotoxicity assays	
• (paraformaldehyde)	Fusions of fluorescent proteins to the C-terminus of human cytoskeletal protein talin, which is concentrated in regions of cell adhesion	
• (paraformaldehyde)	Fusions of fluorescent proteins to the C-terminus of human cytoskeletal protein talin, which is concentrated in regions of cell adhesion	
• (paraformaldehyde)	Fusions of fluorescent proteins to the N-terminus of β-tubulin that allow live-cell imaging of microtubules; to monitor tubulin changes as an indicator of cytotoxicity; also for following cell division in transiently transduced cells, including primary and stem cells	
• (paraformaldehyde)	Fusions of fluorescent proteins to microtubule-associated protein 4 (MAP4), enabling visualization of microtubules in live cells that can also readily be fixed for endpoint studies such as HCS cytotoxicity analyses	
• (paraformaldehyde)	Conjugated to a popular orange-fluorescent dye, tetramethylrhodamine (TRITC); convenient probe for labeling, identifying, and quantitating F-actin in formaldehyde-fixed and permeabilized tissue sections, cell cultures, or cell-free experiments	
	Green-fluorescent staining of polymerized tubulin in live cells	
	Nuclear stain, GC selective, weakly permeant in some cell types	
• (paraformaldehyde)	Alternatives to DNA staining for localizing the nucleus and chromosomes; allow localization of histones and following of cell division in live cells	
• (paraformaldehyde)		
	Excellent nuclear counterstain, useful for mycoplasma detection, semipermeant at high concentration	
	One of the highest-affinity fluorescent probes available for nucleic acid staining; binds to dsDNA, ssDNA, RNA, and oligonucleotides with a significant fluorescence enhancement (>40-fold); the dye's intercalation is not sequence selective	
	Nuclear counterstain, water soluble, relatively nontoxic to cells, slightly more permeant than Hoechst 33258	
• (paraformaldehyde)	Fluorescent proteins targeted specifically to nucleus via the SV40 nuclear localization sequence; allows visualization of the nucleus without utilizing DNA-binding dyes; can also be used as a segmentation marker in endpoint HCS studies	
• (paraformaldehyde)		
• (paraformaldehyde)		
	One of the most commonly used fixed-cell nuclear stains	
	A sampler kit of our most popular nuclear stains, with optimized protocols for product use	
•	Live-cell SYTO® dyes are permeant to eukaryotic and prokaryotic membranes, exhibit affinity for DNA and RNA, and display enhanced fluorescence upon binding	Live-cell nuclear counterstain, useful for bacterial viability
•		Live-cell nuclear counterstain, twice as fluorescent when complexed with RNA as with DNA
•		Live-cell nuclear counterstain
•		Live-cell nuclear counterstain
•		Live-cell nuclear counterstain, live and dead bacterial stain
	Highest-affinity SYTOX® stain, fixed-cell stain, useful as a dead-cell stain, 500x increase in fluorescence upon nucleic acid binding, can be used in conjunction with blue and red stains for multiplexing	
	Fixed-cell nuclear stain, some mitochondrial staining, shorter-wavelength emission than propidium iodide, useful as a dead-cell stain, 500x increase in fluorescence upon nucleic acid binding, can be used in conjunction with blue and green stains for multiplexing	
	Ultrasensitive dsDNA detection, dead-cell stain, electrophoresis pre-stain, used as an alternative to annexin conjugates for analyzing apoptotic cells	

Values given are for fluorescence emission. Fluorescent labels in the Qtracker® Cell Labeling Kits can be excited using virtually any wavelength of light. NA = Not applicable.



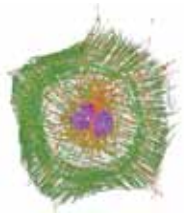
## Labeling and Detection Technologies

Product	Emission color*	Cat. no.	Ex/Em †	Live ‡	Fixed §
<b>Nuclear envelope</b>					
Organelle Lights™ NE-GFP		O36213	485/520	•	
<b>Nucleoli</b>					
SYTO® 81 Orange Nucleic Acid Stain		S11362	530/544	•	
SYTO® RNASelect™ Green		S32703	490/530 (bound to RNA)	•	
<b>Endoplasmic reticulum</b>					
Concanavalin A, Alexa Fluor® 594 Conjugate		C11253	590/617		•
ER-Tracker™ Green		E34251	504/511	•	
ER-Tracker™ Red		E34250	587/615	•	
Organelle Lights™ ER-GFP		O36212	485/520	•	
Organelle Lights™ ER-OPF		O36223	550/580	•	
Organelle Lights™ ER-RFP		O36230	555/584	•	
SelectFX® Alexa Fluor® 488 ER Labeling Kit		S34200	495/519		•
<b>Plasma membrane</b>					
Alexa Fluor® 350 WGA		W11263	346/442	•	•
Alexa Fluor® 488 WGA		W11261	495/519	•	•
Alexa Fluor® 555 WGA		W32464	555/565	•	•
Alexa Fluor® 594 WGA		W11262	590/617	•	•
Alexa Fluor® 633 WGA		W21404	632/647	•	•
Alexa Fluor® 647 WGA		W32466	650/665	•	•
Alexa Fluor® 680 WGA		W32465	679/702	•	•
CellTracker™ CM-Dil		C7001	553/570	•	
FM® 1-43FX		F35355	510/626	•	
FM® 4-64FX		F34653	565/744	•	
Image-iT® LIVE Plasma Membrane and Nuclear Labeling Kit		I34406	350/461 (Hoechst 33342), 590/617 (Alexa Fluor® 594 WGA)	•	•
Lipophilic Tracer Sampler Kit (DiI, DiO, DiR, DiD, DiA)	Several	L7781	Several	•	
Organelle Lights™ PM-CFP		O36216	435/485	•	
Organelle Lights™ PM-GFP		O36214	485/520	•	
Organelle Lights™ PM-OPF		O36226	550/580	•	
Organelle Lights™ PM-RFP		O10139	555/584	•	
<b>Intracellular membranes</b>					
CellTrace™ BODIPY® TR		C34556	598/625	•	•
Image-iT® LIVE Intracellular Membrane and Nuclear Labeling Kit		I34407	350/461 (Hoechst 33342), 598/625 (BODIPY® dye)	•	•
<b>Membrane trafficking</b>					
Cellular Lights™ CSF1r-GFP		C10078	488/510	•	
Cellular Lights™ Exoc1-YFP		C10079	514/528	•	
Organelle Lights™ Endosomes-GFP		O10104	488/510	•	
Organelle Lights™ Endosomes-RFP		O36231	555/584	•	
Organelle Lights™ Synaptophysin-GFP		C10080	488/510	•	
Organelle Lights™ Synaptophysin-RFP		O10138	555/584	•	

\* Gray represents fluorescence emission that is beyond the limit of human vision. † Ex/Em = Fluorescence excitation and emission maxima in nm. ‡ Stains live cells. § Stains fixed cells. \*\* Staining pattern is fixable. †† Values

Fixable**	Key attributes
● (paraformaldehyde)	Targeted specifically to nucleus via the nesprin-1α C-terminal transmembrane domain
●	Nucleolar
●	RNA selective, exhibiting increased fluorescence with RNA binding, prominent nucleolar staining, weak mitochondrial staining
●	Brighter fluorescence than our Texas Red® dye conjugate of concanavalin A, and more photostable; concanavalin A selectively binds to α-mannopyranosyl and α-glucopyranosyl residues
●	ER-Tracker™ Green and Red are live-cell permeant and highly ER-selective BODIPY®-based dyes; when cells are stained using the provided protocol, staining patterns are partially retained after aldehyde fixation
● (paraformaldehyde)	Targeted specifically to nucleus via the ER signal sequence of calreticulin and KDEL (ER retention signal)
● (paraformaldehyde)	
● (paraformaldehyde)	Fusions of fluorescent proteins to the C-terminus of human cytoskeletal protein talin, which is concentrated in regions of cell adhesion
	Kit for ER labeling in fixed cells, providing a primary antibody directed against ER-associated protein disulfide isomerase (PDI), an Alexa Fluor® 488 dye-labeled secondary antibody, PBS, blocking solution, fixative, and permeabilization solutions
●	Versatile cationic probes for detecting glycoconjugates, i.e., <i>N</i> -acetylglucosamine and <i>N</i> -acetylneuraminic acid (sialic acid) residues, on cell membranes; useful in fixed and live cells that have not been permeabilized; best if fixed rapidly after staining
●	
●	
●	
●	
●	
●	Bright and photostable, with excellent cellular retention; particularly suitable for cell tracking and long-term labeling of intracellular membranes, liposomes, viruses, and lipoproteins; aldehyde fixable
●	Exhibit substantially enhanced fluorescence upon insertion into the membrane, can be used for plasma membrane labeling when fixative is applied quickly after cell labeling; used to label the plasma membrane and to study vesiculation; easily applied to cells, nontoxic, water soluble, aldehyde fixable, and nonfluorescent in aqueous environments
●	Contains Alexa Fluor® 594 WGA and Hoechst 33343 for selective staining of the plasma membrane and nucleus of live GFP-transfected cells
●	An assortment of the lipophilic carbocyanine dyes commonly used for membrane staining
● (paraformaldehyde)	Fluorescent proteins targeted to the plasma membrane through the myristoylation/palmitoylation sequence from Lck tyrosine kinase; bright, specific plasma membrane staining
● (paraformaldehyde)	
● (paraformaldehyde)	
● (paraformaldehyde)	
●	Accumulates in cellular membranes including plasma membrane and organelles such as mitochondria, endoplasmic reticulum, and the Golgi apparatus; an excellent counterstain for cells and tissues expressing GFP
●	Contains CellTrace™ BODIPY® TR methyl ester and Hoechst 33343 for selective staining of the intracellular membranes and nuclei of live GFP-transfected cells
● (paraformaldehyde)	BacMam fusion of GFP to the receptor for colony-stimulating factor 1 for analysis of its internalization kinetics
● (paraformaldehyde)	Fusion of Venus to Exoc1, a component of the exocyst complex involved in targeting these vesicles to the plasma membrane; allows following movement of exocytic vesicles in live cells
● (paraformaldehyde)	Fusion of photostable Emerald GFP to Rab5a, an early endosomal marker; allows following live-cell endosomal movement; cells can also be fixed for endpoint studies
● (paraformaldehyde)	Fusions of fluorescent proteins to the C-terminus of human cytoskeletal protein talin, which is concentrated in regions of cell adhesion
● (paraformaldehyde)	Fusions of fluorescent proteins to synaptophysin; for live-cell studies of endocytosis, exocytosis, synaptic vesicles, and membrane-synaptic vesicle complexes
● (paraformaldehyde)	

given are for fluorescence emission. Fluorescent labels in the Qtracker® Cell Labeling Kits can be excited using virtually any wavelength of light. NA = Not applicable.



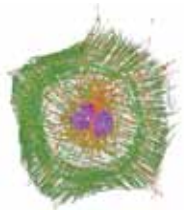
## Labeling and Detection Technologies

Product	Emission color*	Cat. no.	Ex/Em †	Live ‡	Fixed §
<b>Mitochondria</b>					
Anti-OxPhos Complex V inhibitor protein antibody (detection with an Alexa Fluor® dye-labeled secondary antibody)	NA	A21355	NA		•
Image-iT® LIVE Mitochondrial and Nuclear Labeling Kit		I34154	350/461 (Hoechst 33342), 579/599 (MitoTracker® Red)	•	
JC-1		T3168	514/529 (monomer form), 485–589/590 (J-aggregate form)	•	
MitoTracker® Green FM		M7514	490/516	•	
MitoTracker® Red FM		M22425	581/644	•	
MitoTracker® Orange CMTMRos		M7510	554/576	•	
MitoTracker® Red CMXRos		M7512	579/599	•	
MitoTracker® Deep Red FM		M22426	644/665	•	
MitoTracker® Orange CM-H <sub>2</sub> TMRos		M7511	554/576	•	
MitoTracker® Red CM-H <sub>2</sub> XRos		M7513	579/599	•	
Organelle Lights™ Mito-GFP		O36210	485/520	•	
Organelle Lights™ Mito-OPF		O36222	550/580	•	
Organelle Lights™ Mito-RFP		O36229	555/584	•	
<b>Lysosomes</b>					
Image-iT® LIVE Lysosomal and Nuclear Labeling Kit		I34202	350/461 (Hoechst 33342), 577/590 (LysoTracker® Red DND-99)	•	
LysoTracker® Blue DND-22		L7525	373/422	•	
LysoTracker® Green DND-26		L7526	504/511	•	
LysoTracker® Red DND-99		L7528	577/590	•	
LysoSensor™ Blue DND-167		L7533	373/425	•	
LysoSensor™ Green DND-153		L7534	442/505	•	
LysoSensor™ Yellow/Blue Dextran, 10,000 MW		L22460	335, 381/452, 521	•	
LysoSensor™ Yellow/Blue DND-160		L7545	329, 384/440, 540	•	
Organelle Lights™ Lysosomes-RFP		O10100	555/584	•	
Organelle Lights™ Lysosomes-GFP		O36228	485/510	•	
<b>Golgi complex</b>					
Anti-human golgin-97 antibody (detection with an Alexa Fluor® dye-labeled secondary antibody)	NA	A21270	NA		•
BODIPY® FL C <sub>5</sub> -Ceramide, complexed to BSA		D3521, B22650	505/511	•	
BODIPY® TR Ceramide, complexed to BSA		D7540, B34400	589/617	•	
Lectin HPA from <i>Helix pomatia</i> (edible snail), Alexa Fluor® 488 conjugate		L11271	495/519		
Lectin HPA from <i>Helix pomatia</i> (edible snail), Alexa Fluor® 647 conjugate		L32454	650/668		

\* Gray represents fluorescence emission that is beyond the limit of human vision. † Ex/Em = Fluorescence excitation and emission maxima in nm. ‡ Stains live cells. § Stains fixed cells. \*\* Staining pattern is fixable. †† Values

Fixable**	Key attributes
	One of the many important antibody tools for investigating mitochondrial biogenesis and mitochondrion-related diseases by western blotting, native gel electrophoresis, immunohistochemistry, and other techniques; detection by anti-mouse labeled antibodies
•	Contains MitoTracker® Red CMXRos dye and Hoechst 33342 for highly selective mitochondrial and nuclear staining in live GFP-transfected cells
	Widely used cationic dye that is dependent upon mitochondrial membrane potential for accumulation; JC-1 monomer (low concentration) is green, whereas accumulation at higher concentration shifts emission to the red, allowing ratiometric membrane potential measurements
•	Ability to fix makes this a useful alternative to rhodamine 123; a good choice for dual-labeling experiments and an excellent live-cell imaging stain because of its low background fluorescence due to quenching in aqueous environments; photostability, specificity, spectral shift
•	Good live-cell stains, and well suited for multicolor labeling experiments; all are well retained after fixation except MitoTracker® Red FM
•	
•	
•	
•	Does not fluoresce until it enters live cells where it is oxidized to the fluorescent mitochondrion-selective probe and then sequestered in mitochondria
• (paraformaldehyde)	Targeted specifically to mitochondria via the leader sequence of the pyruvate dehydrogenase E1 $\alpha$ subunit
• (paraformaldehyde)	Fusions of fluorescent proteins to the C-terminus of human cytoskeletal protein talin, which is concentrated in regions of cell adhesion
•	Contains LysoTracker® Red DND-99 dye and Hoechst 33342 for highly selective staining of lysosomes and nuclei in live GFP-transfected cells
	Rapid loading, highly selective for acidic organelles at nanomolar concentrations, shows minimal staining of mitochondria, for labeling and tracking of acidic organelles in live cells
	Is taken up very rapidly by live cells; imaging using this dye is best 1–5 min after dye is added
•	Rapid loading, highly selective for acidic organelles at nanomolar concentrations, shows minimal staining of mitochondria, for labeling and tracking of acidic organelles in live cells
	LysoSensor™ dyes exhibit a pH-dependent increase in fluorescence upon acidification (more specific than traditional organic stains); they come in multiple colors with different pK <sub>s</sub> s and are used singly (or potentially in combination) to investigate the acidification of lysosomes and alterations of lysosomal function or trafficking that occur in cells
	Nonfluorescent at pH 7; increased fluorescence in acidic range
	Nonfluorescent at pH 7; increased fluorescence in acidic range
	Fluorescence changes from blue (near neutral pH) to yellow (in acidic compartments); not cell permeant (must be microinjected or loaded by endocytosis); compatible with microscopy and flow cytometry
	pH-dependent dual-excitation and dual-emission peaks for ratiometric imaging; yellow fluorescence in acidic organelles, blue fluorescence in less acidic organelles
• (paraformaldehyde)	Fusion of monomeric TagRFP to lysosomal-associated membrane protein 1; for live-cell visualization of lysosomes and any process in which they are involved—phagocytosis, endocytosis, autophagy
• (paraformaldehyde)	Fusions of fluorescent proteins to the C-terminus of human cytoskeletal protein talin, which is concentrated in regions of cell adhesion
	Detects the peripheral membrane protein golgin-97 on cytoplasmic face of the Golgi complex; cross-reacts with golgin-97 from most species
•	Selective staining of the Golgi complex with applications for lipid metabolism and trafficking studies; brighter, more photostable than NBD conjugates; concentration-dependent shift from green to red in the Golgi complex; good for outlining cell boundaries for observation of morphogenetic movements and for measuring rates of lipid synthesis by Schwann cells
•	Selective staining of the Golgi complex with applications for lipid trafficking studies, brighter and more photostable than NBD conjugates; displays no concentration-dependent emission
	Lectins selectively bind to terminal $\alpha$ -N-acetylgalactosaminyl residues—an intermediate sugar added in O-linkage to serine and threonine residues in <i>cis</i> -Golgi cisternae and then substituted with galactose and sialic acid in the <i>trans</i> -Golgi; for each cell type or tissue it is necessary to empirically determine appropriate lectins and staining conditions

given are for fluorescence emission. Fluorescent labels in the Qtracker® Cell Labeling Kits can be excited using virtually any wavelength of light. NA = Not applicable.



## Labeling and Detection Technologies

Product	Emission color*	Cat. no.	Ex/Em †	Live ‡	Fixed §
<b>Golgi complex, continued</b>					
NBD C <sub>6</sub> -ceramide		N1154	466/536		
Organelle Lights™ Golgi-GFP		O36215	485/520	•	
Organelle Lights™ Golgi-OFP		O36224	550/580	•	
Organelle Lights™ Golgi-RFP		O10098	555/584	•	
<b>Peroxisomes</b>					
Organelle Lights™ Peroxi-GFP		O36211	485/520	•	
SelectFX® Alexa Fluor® 488 Peroxisome Labeling Kit		S34201	495/519		•
<b>Cytoplasm</b>					
Calcein AM		C3100MP	494/517	•	
CellTrace™ Calcein Red-Orange AM		C34851	576/589	•	
CellTrace™ Far Red DDAO-SE		C34553	646/659 (pH-dependent spectra; values determined at pH 9)	•	
Organelle Lights™ Cyto-GFP		O36227	485/520	•	
CellTracker™ Blue CMAC		C2110	353/466	•	
CellTracker™ Green CMFDA		C7025	492/517	•	
CellTracker™ Orange CMTMR		C2927	541/565	•	
CellTracker™ Red CMTPX		C34552	577/602	•	
Qtracker® 525 Cell Labeling Kit		Q25041	525 ††	•	
Qtracker® 565 Cell Labeling Kit		Q25031	565 ††	•	
Qtracker® 585 Cell Labeling Kit		Q25001	585 ††	•	
Qtracker® 605 Cell Labeling Kit		Q25011	605 ††	•	
Qtracker® 655 Cell Labeling Kit		Q25021	655 ††	•	
Qtracker® 705 Cell Labeling Kit		Q25061	705 ††	•	
Qtracker® 800 Cell Labeling Kit		Q25071	800 ††	•	
<b>Whole-cell stains for image segmentation in HCS applications</b>					
CellMask™ Blue Stain		H34558	346/442		•
CellMask™ Deep Red Stain		H34560	650/665		•
CellMask™ Red Stain		H32711	622/645		•
<b>Adiposomes</b>					
LipidTOX™ Deep Red Neutral Lipid Stain		H34477	637/655	•	•
LipidTOX™ Green Neutral Lipid Stain		H34475	495/505	•	•
LipidTOX™ Red Neutral Lipid Stain		H34476	577/609	•	•

\* Gray represents fluorescence emission that is beyond the limit of human vision. † Ex/Em = Fluorescence excitation and emission maxima in nm. ‡ Stains live cells. § Stains fixed cells. \*\* Staining pattern is fixable. †† Values

Fixable**	Key attributes					
	Classic structural marker for the Golgi complex					
● (paraformaldehyde)	Fusion proteins targeted specifically to the Golgi complex via the human Golgi-resident enzyme <i>N</i> -acetylgalactosaminyltransferase-2					
● (paraformaldehyde)						
● (paraformaldehyde)						
● (paraformaldehyde)	Targeted specifically to peroxisomes via the peroxisomal C-terminal targeting sequence					
	Kit for peroxisome labeling in fixed cells, providing a primary antibody directed against peroxisomal membrane protein 70 (PMP 70), an Alexa Fluor® 488 dye-labeled secondary antibody, PBS, blocking solution, fixative, and permeabilization solutions					
	Best single probe available for use in assays for cell adhesion, chemotaxis, and multidrug resistance; has better cell retention in viable cells than fluorescein, carboxyfluorescein, and BCECF; tends to have brighter fluorescence in a number of mammalian cell types					
	Intrinsically fluorescent; a useful cell tracer and indicator of cell viability; can be used in combination with blue- and green-fluorescent probes					
	A fixable, far red-fluorescent tracer for very long-term cell labeling; the succinimidyl ester (SE) reactive group forms a strong covalent attachment to primary amines that occur in proteins and other biomolecules on the inside and outside of cells					
● (paraformaldehyde)	Cytoplasmic localization due to a C-terminal nuclear export sequence					
	<table border="1"> <tr> <td rowspan="4"> <p>Many cell types loaded with CellTracker™ probes remain fluorescent and viable 24 hr after loading, through cell division, and are not transferred to adjacent cells; an excellent choice for investigating cellular thiol levels, cell viability and cytotoxicity, transplantations, and cell fusion; once inside the cell the CellTracker™ dye becomes impermeant and thus well retained with strong fluorescence and uniform cytoplasmic staining; simultaneous use of a CellTracker™ reagent and a calcium indicator may permit ratio measurements of intracellular Ca<sup>2+</sup></p> </td> <td>CellTracker™ Blue CMAC has a low pK<sub>a</sub>, ensuring that it will exhibit bright fluorescence in the cytoplasm at all physiological pH levels; viability in the presence of the reagent extends at least 72 hr</td> </tr> <tr> <td>CellTracker™ Green CMFDA has a relatively low pK<sub>a</sub>, ensuring that it will exhibit bright fluorescence in the cytoplasm at all physiological pH levels; nonfluorescent until esterase cleavage occurs</td> </tr> <tr> <td>CellTracker™ Orange CMTMR has a low pK<sub>a</sub>, ensuring that it will exhibit bright fluorescence in the cytoplasm at all physiological pH levels; viability in the presence of the reagent extends at least 72 hr</td> </tr> <tr> <td>The longer-wavelength CellTracker™ Red CMTPX exhibits bright red fluorescence that is easily distinguished from that of blue-, green-, and far-red-fluorescent probes (including fluorescein-based CellTracker™ Green CMFDA); viability in the presence of the reagent extends at least 72 hr</td> </tr> </table>	<p>Many cell types loaded with CellTracker™ probes remain fluorescent and viable 24 hr after loading, through cell division, and are not transferred to adjacent cells; an excellent choice for investigating cellular thiol levels, cell viability and cytotoxicity, transplantations, and cell fusion; once inside the cell the CellTracker™ dye becomes impermeant and thus well retained with strong fluorescence and uniform cytoplasmic staining; simultaneous use of a CellTracker™ reagent and a calcium indicator may permit ratio measurements of intracellular Ca<sup>2+</sup></p>	CellTracker™ Blue CMAC has a low pK <sub>a</sub> , ensuring that it will exhibit bright fluorescence in the cytoplasm at all physiological pH levels; viability in the presence of the reagent extends at least 72 hr	CellTracker™ Green CMFDA has a relatively low pK <sub>a</sub> , ensuring that it will exhibit bright fluorescence in the cytoplasm at all physiological pH levels; nonfluorescent until esterase cleavage occurs	CellTracker™ Orange CMTMR has a low pK <sub>a</sub> , ensuring that it will exhibit bright fluorescence in the cytoplasm at all physiological pH levels; viability in the presence of the reagent extends at least 72 hr	The longer-wavelength CellTracker™ Red CMTPX exhibits bright red fluorescence that is easily distinguished from that of blue-, green-, and far-red-fluorescent probes (including fluorescein-based CellTracker™ Green CMFDA); viability in the presence of the reagent extends at least 72 hr
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●	Best used with rapidly dividing cells or cells that are endocytically active, including common cell lines such as HeLa, CHO, U188, and 3T3					
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●						
●						
●						
●						
●						
	These stains label cytoplasm and nuclei via nucleic acid binding; no wash steps are required, and imaging can be performed in stain solution; validated as counterstains and segmentation tools for HCS applications; CellMask™ Red stain can be adjusted to give more prominent nuclear labeling or an overall cell stain, depending on the concentration used					
●	Developed for image-based HCS assays to characterize the toxic side effects of compounds on lipid metabolism in mammalian cell lines, and also for the monitoring of adipogenesis; highly specific for neutral lipids, supplied in ready-to-use formulations, require no wash steps					
●						
●						

given are for fluorescence emission. Fluorescent labels in the Qtracker® Cell Labeling Kits can be excited using virtually any wavelength of light. NA = Not applicable.