

# Fixable Viability Stains

**Live-or-Dye™ kits for discrimination between live and dead cells during flow cytometry and microscopy**

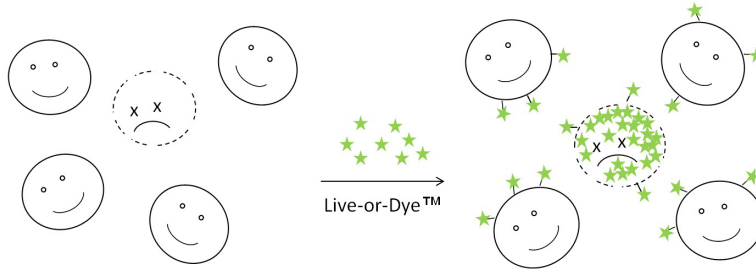


Figure 1. Principle of live/dead cell discrimination using Live-or-Dye™ Fixable Viability Stains

## Amine-reactive Live-or-Dye™ Fixable Viability Stains

Biotium offers a selection of eight different amine-reactive Live-or-Dye™ viability stains spanning the fluorescence spectrum, for maximal flexibility in multi-color analysis (Figure 2 and Table 1, next page). The membrane-impermeant dyes enter dead cells that have compromised membrane integrity and covalently label free amines on intracellular proteins (Figure 1). They are typically used to exclude dead cells from analysis in flow cytometry (Figure 2). Live-or-Dye™ Fixable Viability Staining Kits can also be used to discriminate live from dead cells during microscopy (Figure 3). Live-or-Dye™ labeling is extremely stable, allowing the cells to be fixed and permeabilized without loss of fluorescence or dye transfer between cells.

## Live-or-Dye NucFix™ Red Viability Stain

Live-or-Dye NucFix™ Red is a unique, cell membrane-impermeant dye that specifically stains the nuclei of dead cells (Figure 4). Unlike other commonly used nuclear viability stains such as propidium iodide or DRAQ7™, NucFix™ labeling is extremely stable, allowing the cells to be fixed and permeabilized without loss of fluorescence or dye transfer between cells.

## Live-or-Dye™ advantages

- **Bright:** Superior dyes for maximum separation between live and dead cells.
- **Stable:** No loss of signal after fixation and permeabilization.
- **Flexible:** Live-or-Dye™ Fixable Viability Stains can be used for flow cytometry or microscopy and are compatible with antibody staining and other cell staining techniques.
- **Choice:** 8 colors across the spectrum, as well as 1 red nuclear dye, for maximum versatility in multi-color flow cytometry and cell imaging.

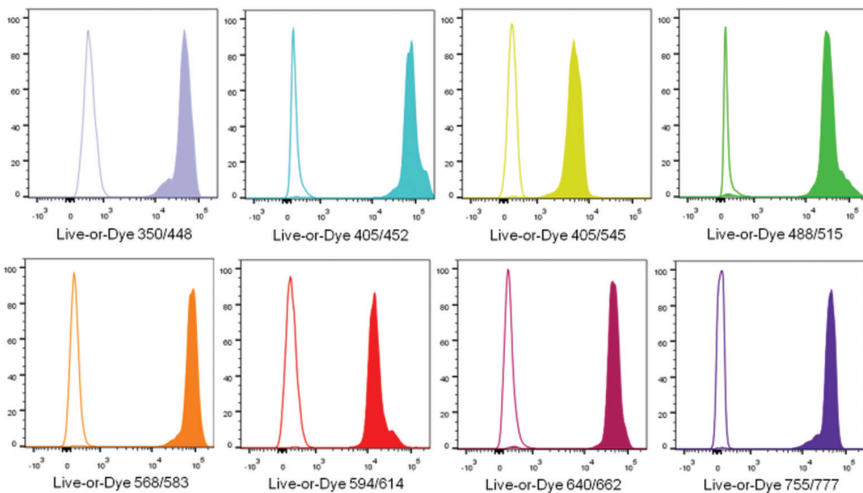


Figure 2. Discrimination of live and dead cells by flow cytometry using Live-or-Dye™ Fixable Viability Stains. Heat killed cells (solid peaks) showed much higher fluorescence intensity compared to live cells (white peaks), allowing the two populations to be clearly distinguished.

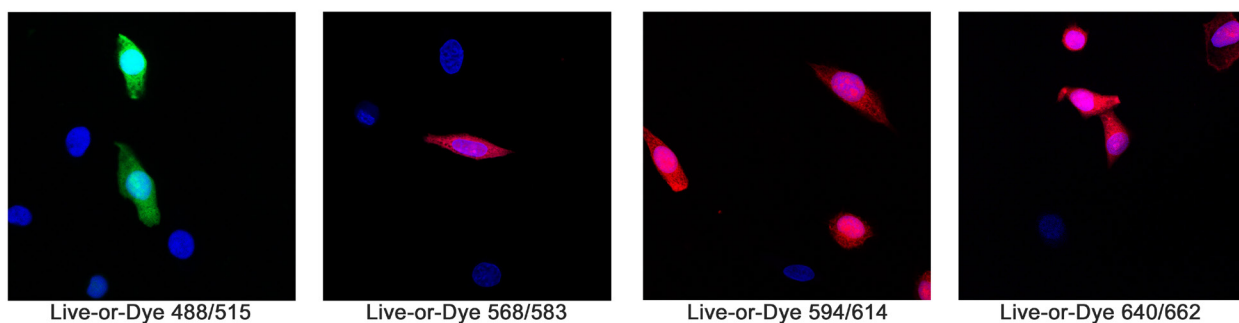


Figure 3. Discrimination of live and dead cells in fluorescence microscopy using Live-or-Dye™ Fixable Viability Stains. Ethanol-treated HeLa cells were stained with the indicated Live-or-Dye™ cell stain and then stained with Hoechst to label both live and dead cells. Killed cells show bright Live-or-Dye™ fluorescence staining, compared to no staining seen in live cells (blue Hoechst-stained nuclei), allowing the two populations to be clearly distinguished.

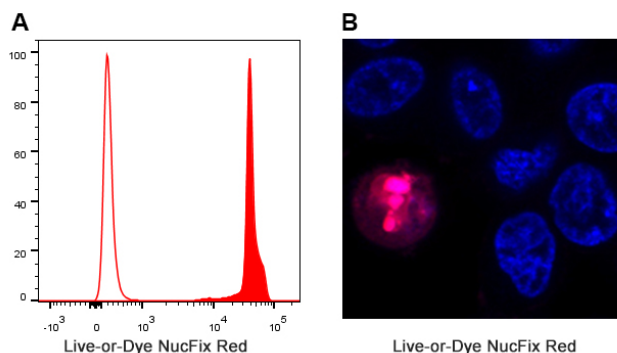


Figure 4. Discrimination of live and dead cells using the Live-or-Dye NucFix™ Red Fixable Viability Stain. A. Live or heat-killed Jurkat cells were stained with Live-or-Dye NucFix™ Red. Heat killed cells (solid peak) showed much higher fluorescence intensity compared to live cells (white peak), allowing the two populations to be clearly distinguished. B. Ethanol-treated HeLa cells were stained with NucFix™ Red together with Hoechst to label all cell nuclei. Killed cells show bright, red nuclear Live-or-Dye™ fluorescence staining, compared to no staining seen in live cells (blue Hoechst-stained nuclei).

Table 1. Spectral Properties and Ordering Information

Cat. # (200 reactions)	Cat. # (50 reactions)	Product Description	Laser line	Emission filter	Abs/Em maxima	Application (FC=flow cytometry; M=microscopy)
32002	32002-T	Live-or-Dye™ 350/448	355 nm	DAPI or Violet	347/488 nm	FC
32003	32003-T	Live-or-Dye™ 405/452	405 nm	Pacific Blue	408/452 nm	FC
32009	32009-T	Live-or-Dye™ 405/545	405 nm	AmCyan	395/545 nm	FC
32004	32004-T	Live-or-Dye™ 488/515	488 nm	FITC	490/515 nm	FC, M
32005	32005-T	Live-or-Dye™ 568/583	488 or 561 nm	PE	562/583 nm	FC, M
32006	32006-T	Live-or-Dye™ 594/614	488 or 561 nm	PE-Texas Red	593/614 nm	FC, M
32007	32007-T	Live-or-Dye™ 640/662	633 or 640 nm	APC	642/662 nm	FC
32008	32008-T	Live-or-Dye™ 750/777	633 or 640 nm	APC-Cy7	755/777 nm	FC, M
32010	32010-T	Live-or-Dye NucFix™ Red	488 or 532 nm	PE-Texas Red	520/510 nm	FC, M

#### Related Products

Cat #	Size	Product name
22003	200 items	Mini Cell Scrapers
30068	~2000 assays	ViaFluor® SE 405 Cell Proliferation Assay Kit
30050	~2000 assays	ViaFluor® SE CFSE Cell Proliferation Assay Kit
30086	~2000 assays	ViaFluor® SE 488 Cell Proliferation Assay Kit
23006	50 tests	Flow Cytometry Fixation/Permeabilization Kit
22015	100 mL	Fixation Buffer
22016	100 mL	Permeabilization Buffer
100403-T	10-20 assays	NucView® 488 Caspase-3 Substrate, 1 mM in PBS