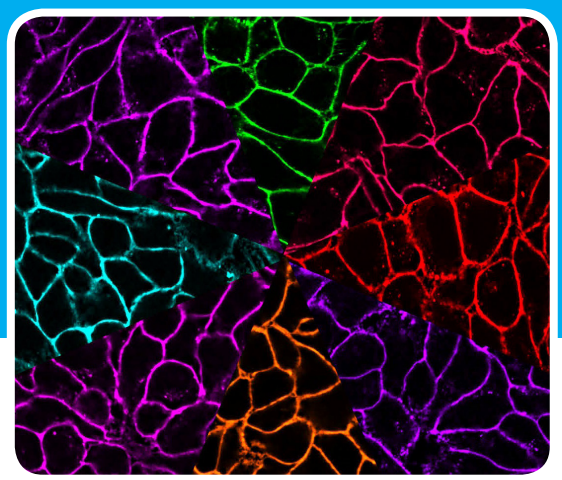

Membrane & Cell Surface Stains

Options for live or fixed cells

Visualize cell outlines in multi-color fluorescence staining

- Unique membrane stains that can be fixed & permeabilized
- Choices for different workflows
- Wide selection of colors
- Options for yeast & bacteria

Find a fluorescent surface stain for your application

Biotium offers a variety of highly fluorescent and photostable stains to visualize cell boundaries and morphology in multi-color staining experiments. Our original CellBrite™ Cytoplasmic Membrane Stains are lipophilic dyes for simple, non-toxic, stable labeling of membranes in live or fixed cells. Cells can be fixed with formaldehyde before or after CellBrite™ staining. But the staining has poor tolerance for permeabilization or methanol fixation, so CellBrite™ staining is not easily combined with intracellular immunofluorescence (IF) staining. The dyes also do not stain bacteria or yeast.

Biotium's new CellBrite™ Fix and MemBrite™ Fix stains were developed to overcome some of these shortcomings. They are novel covalent stains that can be fixed and permeabilized for IF staining. CellBrite™ Fix Membrane Stains are fluorogenic reactive membrane dyes that rapidly accumulate at the plasma membrane. When they incorporate into lipids, they become fluorescent, and at the same time react covalently with membrane proteins for stable labeling. Staining takes only 15 minutes in a single step with no wash. CellBrite™ Fix stains mammalian cells, yeast, and bacteria.

MemBrite™ Fix Cell Surface Stains do not bind lipids, but label cell surface proteins. MemBrite™ Fix requires a two-step staining protocol with washing, but offers a more extensive choice of dye colors than CellBrite™ Fix. MemBrite™ Fix also can be used to stain yeast. But unlike original CellBrite™ dyes and lectins, CellBrite™ Fix and MemBrite™ Fix cannot be used on cells that are already fixed.

We also offer the lectins WGA and Con A conjugated to our bright and photostable CF® dyes. Lectins label glycoproteins on the surface of live or fixed cells, but also label secretory and endocytic compartments in permeabilized cells. Lectin staining may be cell-type dependent in mammalian cells, but they are also useful bacterial Gram stains and yeast stains.

Find a stain that fits your workflow

A. Stain, then fix

1. Stain live cells
2. Fix

Recommended Products:

- CellBrite™ Cytoplasmic Membrane Stains
- MemBrite™ Fix Cell Surface Staining Kits
- CellBrite™ Fix Membrane Stains
- CF® Dye WGA or Con A

B. Stain, fix, then permeabilize

1. Stain live cells
2. Fix
3. Permeabilize

Recommended Products:

- MemBrite™ Fix Cell Surface Staining Kits
- CellBrite™ Fix Membrane Stains
- CF® Dye WGA or Con A

C. Fix, then stain

1. Fix cells
2. Stain

Recommended Products:

- CellBrite™ Cytoplasmic Membrane Stains
- CF® Dye WGA or Con A

Look inside for detailed product comparisons.

Biotium

CellBrite™ Fix & MemBrite™ Fix tolerate fixation & permeabilization

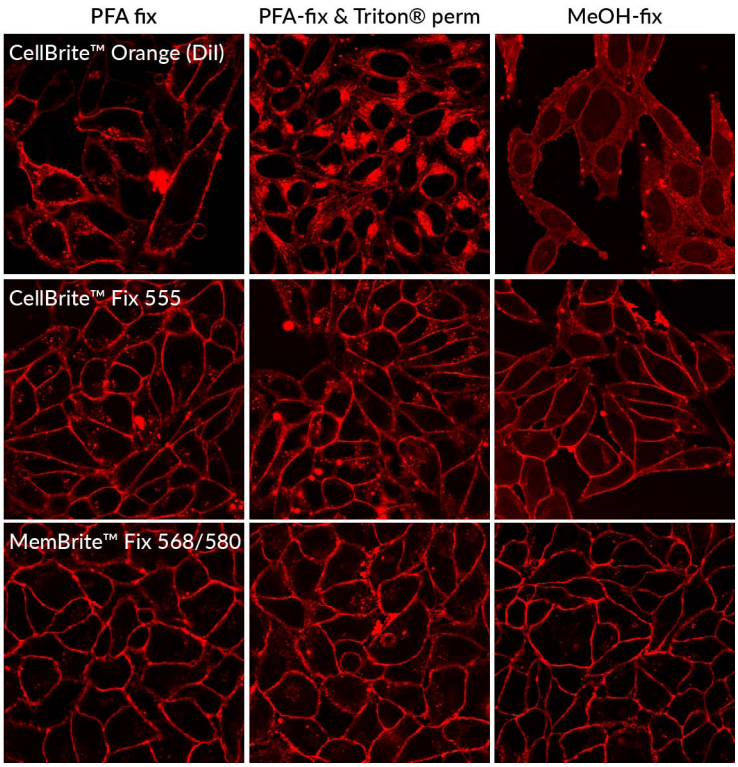

Figure 1. CellBrite™ Fix and MemBrite™ Fix label the cell surface more evenly than lipophilic membrane stains like original CellBrite™, and tolerate fixation and permeabilization. Live HeLa cells were labeled CellBrite™ Orange (DiI), CellBrite™ Fix 555, or MemBrite™ Fix 568/580. Cells were then fixed with 4% paraformaldehyde/PBS for 20 minutes at room temperature (left column), followed by permeabilization in 0.1% Triton® X-100 in PBS for 10 minutes at room temperature (center column), or fixed with ice-cold methanol for 5 minutes at -20°C (right column). Because CellBrite™ Fix and MemBrite™ Fix labeling is covalent, it does not redistribute after permeabilization, unlike lipophilic CellBrite™ Orange (DiI).

Stain before or after fixation with CellBrite™ Cytoplasmic Membrane Dyes

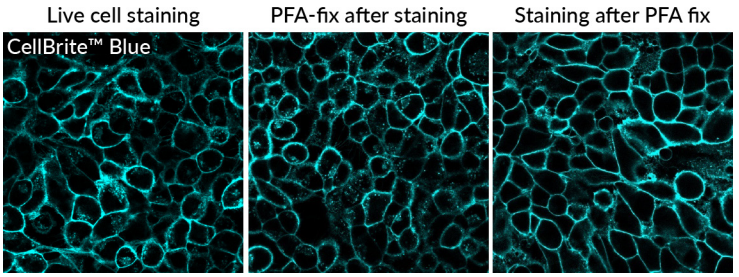

Figure 2. Original CellBrite™ Cytoplasmic Membrane Stains can be used to stain cells before or after fixation. CellBrite™ Blue staining of live cells (left), cells stained live, then fixed with formaldehyde (PFA) (center), and cells fixed with PFA, then stained with CellBrite™ Blue (right).

CellBrite™ Fix for immunofluorescence

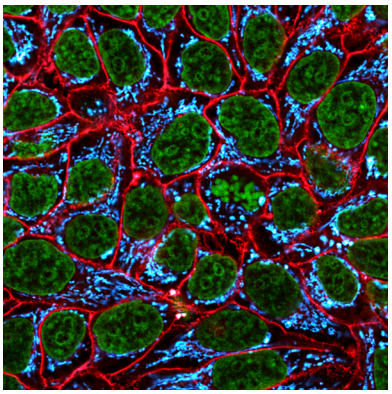

Figure 3. Cells labeled with CellBrite™ Fix 555, then fixed with methanol and stained with CF®640R anti-Mitochondrial Marker (clone 113-1) (cyan) and NucSpot® 470 nuclear stain (green).

Find the right stain for your application

I want to...	Recommended products	Notes
Stain live cells	• CellBrite™ Cytoplasmic Membrane Stains • CellBrite™ Fix Membrane Stains • MemBrite™ Fix Cell Surface Stains • CF® Dye WGA or Con A	• CellBrite™ Fix and MemBrite™ Fix stain more uniformly than original CellBrite™ Cytoplasmic Membrane Stains. • WGA or Con A staining may be cell-type dependent.
Perform long term staining of live cells	• CellBrite™ Cytoplasmic Membrane Stains • CellBrite™ Fix Membrane Stains • MemBrite™ Fix Cell Surface Stains	• Dyes will be internalized by live cells over time as membranes turn over by endocytosis.
Fix with formaldehyde after staining live cells	• CellBrite™ Cytoplasmic Membrane Stains • CellBrite™ Fix Membrane Stains • MemBrite™ Fix Cell Surface Stains • CF® Dye WGA or Con A	• CellBrite™ Fix and MemBrite™ Fix stain more uniformly than original CellBrite™ Cytoplasmic Membrane Stains. • For uniform fixable staining at 4°C, we recommend MemBrite™ Fix.
Permeabilize with detergent after fixing stained cells	• CellBrite™ Fix Membrane Stains • MemBrite™ Fix Cell Surface Stains • CF® Dye WGA or Con A	• WGA or Con A staining may be cell-type dependent.
Fix with MeOH after staining live cells	• CellBrite™ Fix Membrane Stains • MemBrite™ Fix Cell Surface Stains • CF® Dye WGA or Con A	• For uniform fixable staining at 4°C, we recommend MemBrite™ Fix.
Stain formaldehyde-fixed cells	• CellBrite™ Cytoplasmic Membrane Stains • CF® Dye WGA or Con A	• Permeabilization after fixing may affect the distribution of CellBrite™ Cytoplasmic Membrane Stains. • Surface and intracellular staining may be observed in fixed or fixed/permeabilized cells. • WGA or Con A staining may be cell-type dependent.
Stain methanol-fixed cells	• CF® Dye WGA or Con A	• WGA or Con A staining may be cell-type dependent. • Surface and intracellular staining may be observed in fixed or fixed/permeabilized cells.
Stain bacterial cell surface	• CellBrite™ Fix Membrane Stains	• WGA and MemBrite™ Fix stain gram+ cells but not gram- bacteria.
Stain yeast cell surface	• CellBrite™ Fix Membrane Stains • MemBrite™ Fix Cell Surface Stains • CF® Dye Con A	• WGA selectively stains yeast bud scars.

CF® dye lectin conjugate staining

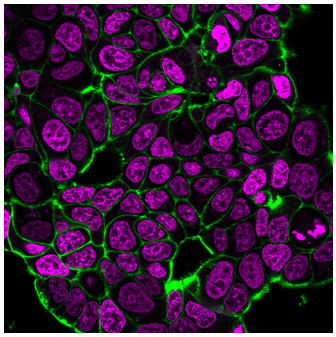

Figure 4. Live MCF-7 cells stained with CF®488A WGA (green) and RedDot™1 far-red nuclear stain (magenta).

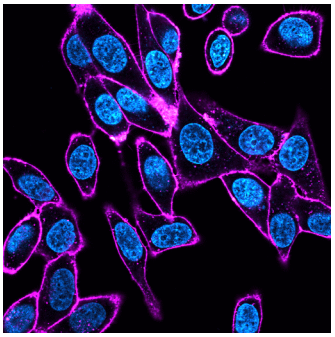

Figure 5. Live HeLa cells stained with CF®640R Con A (magenta) and Hoechst 33342 nuclear stain (blue).

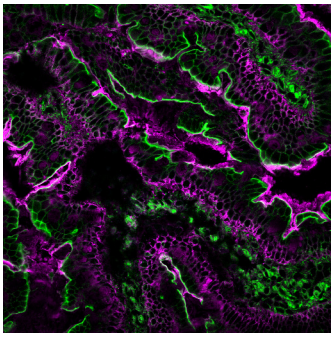

Figure 6. Rat intestine cryosection stained with CF®640R WGA (magenta) and CF®488A phalloidin (green).

Surface stains for yeast and bacteria

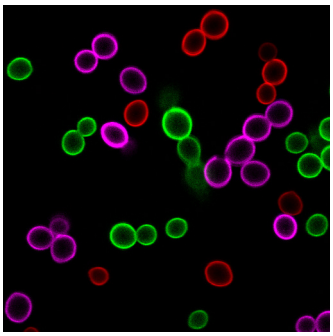

Figure 7. *S. cerevisiae* stained with MemBrite™ Fix 488/515 (green), 568/580 (red), and 640/660 (magenta), then mixed.

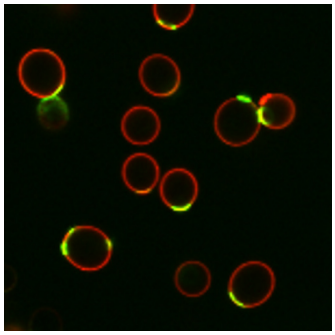

Figure 8. *S. cerevisiae* stained with CF®594 Con A (cell walls, red) and CF®488A WGA (bud scars, green).

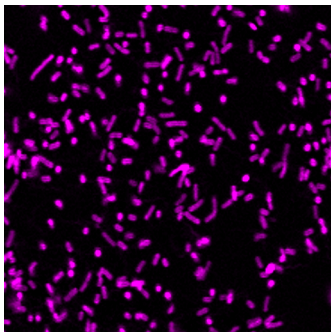

Figure 9. Live culture of *E. coli* stained with CellBrite™ Fix 640.

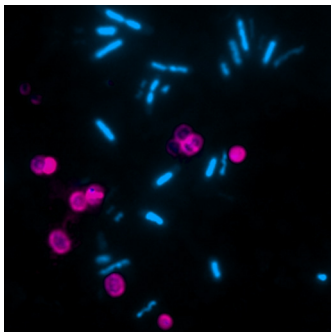

Figure 10. Mixed culture of gram- *E. coli* and gram+ *S. epidermidis* stained with CF®640R WGA (magenta) and DAPI (blue).

Compare membrane and surface stains

Product	Can fix after staining?	Can perm?	Stains fixed cells	Non-toxic	Stains bacteria	Stains yeast	Transfers between cells	Colors	Pros	Cons
CellBrite™ & CellBrite™ NIR Cytoplasmic Membrane Dyes	Yes	No	Yes	Yes	No	No	No	4 colors from blue to far-red 4 near-IR colors	• Simple staining protocol • Stain before or after PFA fix • Non-toxic & stable in live cells for days to weeks*	• Uneven live cell staining • Poor tolerance for detergent • Can't fix with MeOH • Can't stain yeast or bacteria
CellBrite™ Fix Membrane Staining Kits	Yes	Yes	No	Yes	Yes	Yes	No	Green, red, far-red	• Rapid, uniform staining • Can fix & perm for IF • Fix with PFA or MeOH • Washing after staining optional • Stains yeast & bacteria • Stable in live cells for days*	• Can't stain fixed cells • Limited color selection
MemBrite™ Fix Cell Surface Staining Kits	Yes	Yes	No	Yes	Gram+ only	Yes	No	8 colors from blue to near-IR	• Rapid, uniform staining • Efficient staining at 4°C • Can fix & perm for IF • Fix with PFA or MeOH • Great color selection • Stable in live cells for days*	• Can't stain fixed cells • Wash after stain required
CF® Dye WGA Conjugates	Yes	Yes	Yes	No	Gram+ only	Bud scars	Possible	13 colors from UV to near-IR	• Extensive color selection • Bacterial Gram stain • Yeast bud scar stain • Fix before or after staining	• May be toxic or stimulatory to cells • Some intracellular staining in permeabilized cells • Staining may be cell-type dependent
CF® Dye ConA Conjugates	Yes	Yes	Yes	No	Strain dependent	Yes	Possible	10 colors from UV to near-IR	• Extensive color selection • Yeast cell wall stain • Fix before or after staining	• May be toxic or stimulatory to cells • Some intracellular staining in permeabilized cells • Staining may be cell-type dependent

* Surface staining will be internalized by endocytosis in live cells over time.

Membrane & Cell Surface Stains Ordering Information

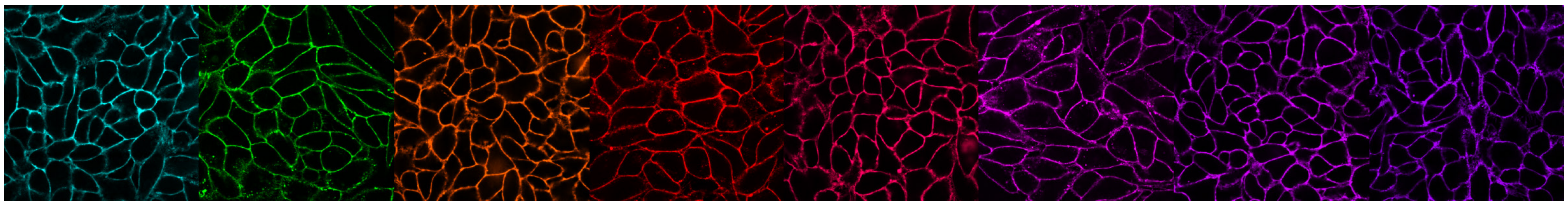

Figure 11. MemBrite™ Fix dyes are available in eight colors from blue to near-IR.

CellBrite™ & CellBrite™ NIR Cytoplasmic Membrane Dyes

CellBrite™ supplied as 1 mL of 200X dye; CellBrite™ NIR supplied as 100 uL of 2 mM dye

Cat. #	Description	Abs/Em
30024	CellBrite™ Blue Cytoplasmic Membrane Staining Kit	366/441 nm
30021	CellBrite™ Green Cytoplasmic Membrane Labeling Dye	484/501 nm
30022	CellBrite™ Orange Cytoplasmic Membrane Labeling Dye	549/565 nm
30023	CellBrite™ Red Cytoplasmic Membrane Labeling Dye	644/665 nm
30070	CellBrite™ NIR680 Membrane Labeling Dye	683/724 nm
30077	CellBrite™ NIR750 Membrane Labeling Dye	748/780 nm
30078	CellBrite™ NIR770 Membrane Labeling Dye	767/806 nm
30079	CellBrite™ NIR790 Membrane Labeling Dye	786/820 nm

CellBrite™ Fix Membrane Labeling Kits

Trial size kit: 100 labeling reactions; Regular size kit: 5 x 100 labeling reactions
Size based on 200 uL labeling volume, actual number of assays may vary

Cat. #	Description	Abs/Em
30090	CellBrite™ Fix 488 Membrane Stain	480/513 nm
30088	CellBrite™ Fix 555 Membrane Stain	542/571 nm
30089	CellBrite™ Fix 640 Membrane Stain	638/667 nm

MemBrite™ Fix Cell Surface Labeling Kits

Trial size kit: 100 labeling reactions; Regular size kit: 5 x 100 labeling reactions
Size based on 200 uL labeling volume, actual number of assays may vary

Cat. #	MemBrite™ Fix Cell Surface Staining Kits	Abs/Em
30092	MemBrite™ Fix 405/430 Cell Surface Staining Kit	405/430 nm
30093	MemBrite™ Fix 488/515 Cell Surface Staining Kit	488/515 nm
30094	MemBrite™ Fix 543/560 Cell Surface Staining Kit	543/560 nm
30095	MemBrite™ Fix 568/580 Cell Surface Staining Kit	568/580 nm
30096	MemBrite™ Fix 594/615 Cell Surface Staining Kit	594/615 nm
30097	MemBrite™ Fix 640/660 Cell Surface Staining Kit	640/660 nm
30098	MemBrite™ Fix 660/680 Cell Surface Staining Kit	660/680 nm
30099	MemBrite™ Fix 680/700 Cell Surface Staining Kit	680/700 nm

CF® Dye Wheat Germ Agglutinin (WGA) Conjugates

Unit size: 1 mg or 5 x 1 mg

Cat. #	Description	Abs/Em
29021	CF®350 Wheat Germ Agglutinin (WGA) Conjugate	347/448 nm
29027	CF®405S Wheat Germ Agglutinin (WGA) Conjugate	404/431 nm
29028	CF®405M Wheat Germ Agglutinin (WGA) Conjugate	408/452 nm
29022	CF®488A Wheat Germ Agglutinin (WGA) Conjugate	490/515 nm
29064	CF®532 Wheat Germ Agglutinin (WGA) Conjugate	527/558 nm
29076	CF®555 Wheat Germ Agglutinin (WGA) Conjugate	555/565 nm
29077	CF®568 Wheat Germ Agglutinin (WGA) Conjugate	562/583 nm
29023	CF®594 Wheat Germ Agglutinin (WGA) Conjugate	593/614 nm
29024	CF®633 Wheat Germ Agglutinin (WGA) Conjugate	630/650 nm
29026	CF®640R Wheat Germ Agglutinin (WGA) Conjugate	642/662 nm
29029	CF®680 Wheat Germ Agglutinin (WGA) Conjugate	681/698 nm
29025	CF®680R Wheat Germ Agglutinin (WGA) Conjugate	680/701 nm
29059	CF®770 Wheat Germ Agglutinin (WGA) Conjugate	770/797 nm

CF® Dye Concanavalin A (Con A) Conjugates

Unit size: 5 mg

Cat. #	Description	Abs/Em
29015	CF®350 Concanavalin A (Con A) Conjugate	347/448 nm
29075	CF®405S Concanavalin A (Con A) Conjugate	404/431 nm
29074	CF®405M Concanavalin A (Con A) Conjugate	408/452 nm
29016	CF®488A Concanavalin A (Con A) Conjugate	490/515 nm
29017	CF®594 Concanavalin A (Con A) Conjugate	593/614 nm
29018	CF®633 Concanavalin A (Con A) Conjugate	630/650 nm
29019	CF®640R Concanavalin A (Con A) Conjugate	642/662 nm
29020	CF®680 Concanavalin A (Con A) Conjugate	681/698 nm
29080	CF®750 Concanavalin A (Con A) Conjugate	755/777 nm
29058	CF®770 Concanavalin A (Con A) Conjugate	770/797 nm

www.biotium.com
General Inquiries: order@biotium.com
Technical Support: techsupport@biotium.com
Phone: 800-304-5357

Biotium