Phalloidin Conjugates

A highly selective actin filament stain for fixed and permeabilized cells. Labeled phalloidins have similar affinity for both large and small filaments.

Product attributes

Probe cellular localization	Cytoskeleton, F-Actin
For live or fixed cells	For fixed cells
Assay type/options	Tissue staining
Detection method/readout	Fluorescence microscopy
Cell permeability	Membrane impermeant
Fixation options	Fix before staining (formaldehyde), Permeabilize before staining
Toxin	Phalloidin
Colors	Blue, Green, Orange, Red, Far-red, Near-infrared

Product Description

A toxin isolated from the deadly *Amanita phalloides* mushroom. It is a bicyclic peptide that binds specifically to F-actin. When conjugated to a fluorescent label, it will stain actin filaments in fixed and permeabilized cells.

- Choice of 17 bright & photostable CF® Dyes, biotin, or other common fluorophores
- Dye options for super-resolution and 2-photon imaging
- Excellent signal to background with negligible non-specific staining

Note: Biotium also offers ActinBrite™ High Affinity Phalloidin Conjugates which were designed to preserve high phalloidin affinity for F-actin, resulting in bright staining that can be imaged more than one month after staining with minimal loss of signal or specificity.

Fluorescently-labeled phalloidins bind to F-actin with nanomolar affinity. Labeled phalloidins have similar affinity for both large and small filaments, binding in a stoichiometric ratio of about one phalloidin molecule per actin subunit in muscle and nonmuscle cells from various species of plants, animals and fungi. Different from antibodies, the binding affinity of phalloidin does not change significantly with actin among different species.

Fluorescently-labeled phalloidin is typically used to stain fixed and permeabilized cells. Labeled phalloidins are not cell-permeant and have therefore not been used extensively with living cells, however they can be loaded into live cells via cationic liposomes.

Phalloidin stock solutions are very stable. But binding of fluorescent phalloidins to cells is more labile than other probes, such as antibodies, and staining can become non-specific or lost over time. For best results, store phalloidin-stained samples in a suitable mounting medium at 4°C, protected from light. For certain phalloidin conjugates, especially CF®405M, CF®647, and CF®680, we recommend imaging immediately or shortly after staining. Staining with our other CF® Dye phalloidins usually is stable for up to a week when specimens are stored at 4°C, protected from light.

For stable F-actin staining, Biotium recommends ActinBrite™ High Affinity Phalloidin Conjugates which were designed to preserve strong F-actin binding. With ActinBrite™, samples can be imaged after for a month or more (depending on the conjugate and mounting method)—making delayed imaging easier and more dependable.

Superior CF® Dyes

Biotium's next-generation CF® Dyes were designed to be highly water-soluble with advantages in brightness and photostability compared to Alexa Fluor®, DyLight®, and other fluorescent dyes. Learn more about CF® Dyes.

Note: Conjugates of blue-fluorescent dyes like CF®350, CF®405S and CF®405M are not recommended for detecting low abundance targets and may be challenging to use in tissue specimens. Blue dyes have lower fluorescence and photostability, and cells and tissue have high autofluorescence in blue wavelengths, resulting in lower signal to noise compared to other colors.

Super-Resolution Microscopy

CF®647 and CF®680 phalloidins are recommended mainly for STORM applications. Certain CF® Dyes are compatible with various super resolution imaging techniques. The superior brightness, photostability, and photochemical switching properties of certain CF® Dyes are ideal for 3-D SIM, 3-D STORM, and other super-resolution and single-molecule imaging approaches. Learn more about CF® Dyes for super-resolution microscopy.

Phalloidin Conjugates

Product	Conjugation	Ex/Em	Size	Catalog No.	Purchase
Biotin-XX Phalloidin	Biotin-XX	N/A	100 U	00028	Purchase 00028
CF®350 Phalloidin	CF®350	347/448 nm	50 U	00049-T	Purchase 00049-T
300 U	00049	Purchase 00049			
CF®405M Phalloidin	CF®405M	408/452 nm	50 U	00034-T	Purchase 00034-T
300 U	00034	Purchase 00034			
CF®430 Phalloidin	CF®430	426/498 nm	50 U	00054-T	Purchase 00054-T
300 U	00054	Purchase 00054			
CF®440 Phalloidin	CF®440	440/515 nm	50 U	00055-T	Purchase 00055-T
300 U	00055	Purchase 00055			
CF®488A Phalloidin	CF®488A	490/515 nm	50 U	00042-T	Purchase 00042-T
300 U	00042	Purchase 00042			
CF®532 Phalloidin	CF®532	527/558 nm	50 U	00051-T	Purchase 00051-T
300 U	00051	Purchase 00051			
CF®543 Phalloidin	CF®543	541/560 nm	50 U	00043-T	Purchase 00043-T
300 U	00043	Purchase 00043			
CF®568 Phalloidin	CF®568	562/583 nm	50 U	00044-T	Purchase 00044-T
300 U	00044	Purchase 00044			
CF®583R Phalloidin	CF®583R	586/609 nm	50 U	00064-T	Purchase 00064-T
300 U	00064	Purchase 00064			
CF®594 Phalloidin	CF®594	593/614 nm	50 U	00045-T	Purchase 00045-T
300 U	00045	Purchase 00045			
CF®633 Phalloidin	CF®633	630/650 nm	50 U	00046-T	Purchase 00046-T
300 U	00046	Purchase 00046			
CF®640R Phalloidin	CF®640R	642/662 nm	50 U	00050-T	Purchase 00050-T
300 U	00050	Purchase 00050			
CF®647 Phalloidin*	CF®647	650/665 nm	50 U	00041-T	Purchase 00041-T*
300 U	00041	Purchase 00041*			
CF®660C Phalloidin	CF®660C	667/685 nm	50 U	00052-T	Purchase 00052-T
300 U	00052	Purchase 00052			
CF®660R Phalloidin	CF®660R	663/682 nm	50 U	00047-T	Purchase 00047-T
300 U	00047	Purchase 00047			
CF®680 Phalloidin*	CF®680	681/698 nm	50 U	00053-T	Purchase 00053-T*
300 U	00053	Purchase 00053*			
CF®680R Phalloidin	CF®680R	680/701 nm	50 U	00048-T	Purchase 00048-T
300 U	00048	Purchase 00048			
Fluorescein Phalloidin	Fluorescein	496/516 nm	300 U	00030	Purchase 00030
Rhodamine Phalloidin	Rhodamine	540/565 nm	300 U	00027	Purchase 00027
Rhodamine 110 Phalloidin	Rhodamine 110	502/524 nm	300 U	00032	Purchase 00032
Sulforhodamine 101 (Texas Red®) Phalloidin	Texas Red®	591/608 nm	300 U	00033	Purchase 00033

*CF®647 and CF®680 phalloidins are recommended for STORM applications, but due to the instability of staining with these conjugates, we do not recommend using them for other microscopy applications. For other applications requiring far-red phalloidins, we recommend CF®633, CF®640R, or CF®680R phalloidins, which have more stable binding.
Note: CF®555 Phalloidin (00040, 00040-T) has been discontinued. We recommend CF®568 Phalloidin as a replacement for conventional microscopy, or CF®583R Phalloidin as a replacement for STORM.

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References

Download a list of CF® dye Phalloidin references.