

Cell Navigator™ F-Actin Labeling Kit

Green Fluorescence

Ordering Information	Storage Conditions	Instrument Platform
Product Number: 22661 (500 assays)	Keep in freezer and protect from light	Fluorescence microscope

Introduction

Actin is a globular, roughly 42-kDa protein found in almost all eukaryotic cells. It is also one of the most highly-conserved proteins, differing by no more than 20% in species as diverse as algae and humans. Actin is the monomeric subunit of two types of filaments in cells: microfilaments, one of the three major components of the cytoskeleton, and thin filaments, part of the contractile apparatus in muscle cells. Thus, actin participates in many important cellular processes including muscle contraction, cell motility, cell division and cytokinesis, vesicle and organelle movement, cell signaling, as well as the establishment and maintenance of cell junctions and cell shape.

Our Cell Navigator™ fluorescence imaging kits are a set of fluorescence imaging tools for labeling sub-cellular organelles such as membranes, lysosomes, mitochondria, nuclei, etc. The selective labeling of live cell compartments provides a powerful method for studying cellular events in a spatial and temporal context.

This particular kit is designed to label F-actins in fixed cells with green fluorescence. The kit uses a green fluorescent phalloidin conjugate that is selectively bound to F-actins. This green fluorescent phalloidin conjugate is a high-affinity probe for F-actins. When used at nanomolar concentrations, phalloidins are convenient probes for labeling, identifying and quantitating F-actin in formaldehyde-fixed and permeabilized tissue sections, cell cultures or cell-free experiments. The kit provides all the essential components with an optimized staining protocol, which is robust requiring minimal hands-on time. It is an excellent tool for preserving the fluorescent images of particular cells. The phalloidin conjugate has spectral properties similar to those of FITC (Ex/Em = 500/520 nm). It can also be used for fluorescence microscope demonstrations using FITC filter (Ex/Em = 490/525 nm).

Kit Components

Components	Amount
Component A: iFluor™ 488-Phalloidin	1 vial (50 µL)
Component B: Labeling Buffer	50 mL

Assay Protocol

Brief Summary

Prepare samples (microplate wells) → Remove the liquid from the plate → Add 100 µL/well of iFluor™ 488-Phalloidin solution → Stain the cells at RT for 15 to 60 minutes → Wash the cells → Examine the specimen under microscope at Ex/Em = 488/520 nm

Note: Warm all the components to room temperature before opening.

1. Prepare 1X iFluor™ 488-Phalloidin working solution:

Add 10 µL of iFluor™ 488-Phalloidin (Component A) to 10 mL of Labeling Buffer (Component B).

Note 1: The unused 1X iFluor™ 488-Phalloidin stock solution should be aliquoted and stored at -20 °C. Protect from light.

Note 2: Different cell types might be stained differently. The concentration of iFluor™ 488-Phalloidin working solution should be prepared accordingly.

2. Stain the cells:

- 2.1 Perform formaldehyde fixation. Incubate the cells with 3.0–4.0 % formaldehyde in PBS at room temperature for 10–30 minutes.

Note: Avoid any methanol containing fixatives since methanol can disrupt actin during the fixation process. The preferred fixative is methanol-free formaldehyde.

- 2.2 Rinse the fixed cells 2–3 times in PBS.
- 2.3 Optional: Add 0.1% Triton X-100 in PBS into fixed cells (from Step 2.2) for 3 to 5 minutes to increase permeability. Rinse the cells 2–3 times in PBS.
- 2.4 Add 100 μ L/well (96-well plate) of iFluor™ 488-Phalloidin working solution (from Step 1) into the fixed cells (from Step 2.2 or 2.3), and stain the cells at room temperature for 15 to 60 minutes.
- 2.5 Rinse cells gently with PBS 2 to 3 times to remove excess dye before plate sealing and imaging by using FITC channel.

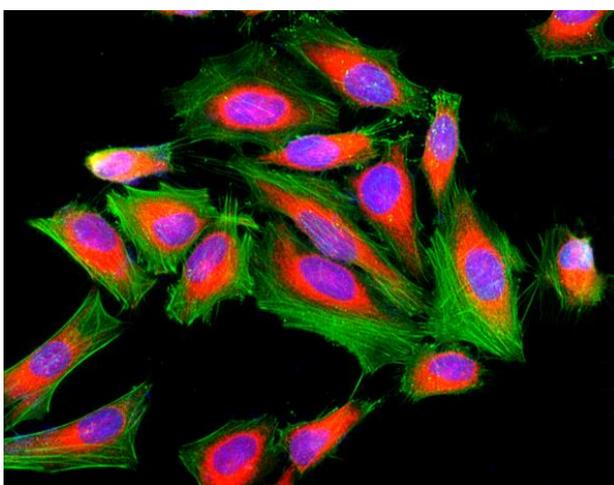


Figure 1. Fluorescence image of HeLa cells fixed with 4% formaldehyde then stained with Cell Navigator™ F-Actin Labeling Kit *Green Fluorescence* in a Costar black 96-well plate. Cell were labeled with iFluor™ 488-Phalloidin (Cat#22261, Green) and nuclei stain DAPI (Cat#17507, Blue), respectively. Cell endoplasmic reticulum (ER) was stained with ER Red™ (Cat#22636, Red) before fixation.

References

1. Szczesna D, Lehrer SS (1993). The binding of fluorescent phalloidins to actin in myofibrils. *J Muscle Res Cell Motil*, 14(6), 594.
2. Johnson S C, Nancy M, McKenna M N, and Wang Y (1988). Association of microinjected myosin and its subfragments with myofibrils in living muscle cells. *J Cell Biol*, 107(6), 2213.
3. Wang K, Feramisco JR, Ash JF (1982). Fluorescent localization of contractile proteins in tissue culture cells. *Methods Enzymol*, 85 Pt B, 514.
4. Miki M, Barden JA, dos Remedios CG, Phillips L, Hambly BD (1987). Interaction of phalloidin with chemically modified actin. *Eur J Biochem* 165, 125.
5. Cooper JA. (1987). Effects of cytochalasin and phalloidin on actin. *J Cell Biol* 105, 1473.

Warning: This kit is only sold to end users. Neither resale nor transfer to a third party is allowed without written permission from AAT Bioquest. Chemical analysis of the kit components is strictly prohibited. Please call us at 408-733-1055 or e-mail us at info@aatbio.com if you have any questions.