# CF™633 Dye

## *Truly the best dye for the 633/635 nm lasers*

### Technical Summary

**Abs/Em Maxima:** 630/650 nm
**Extinction coefficient:** 100,000
**Molecular weight:** ~820
**Flow cytometry laser line:** 633 or 635 nm
**Microscopy laser line:** 633 or 635 nm
**Direct replacement for:** Alexa Fluor® 633, Alexa Fluor® 647, Cy™5 and DyLight™ 649

### Advantages

- Yields the brightest antibody conjugates among spectrally similar dyes when excited by the 633 nm He-Ne laser or the 635 nm red diode laser
- Far more photostable than Alexa Fluor® 647
- Highly water-soluble

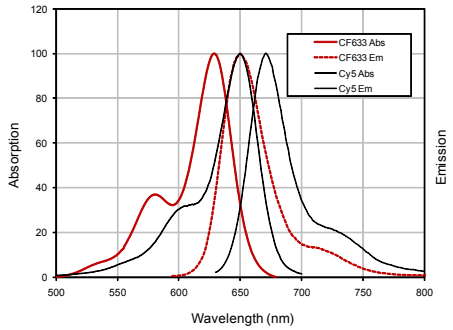


**Figure 1.** Absorption and emission spectra of goat anti-mouse IgG conjugates labeled with CF™633 and Cy™5, respectively, in PBS.

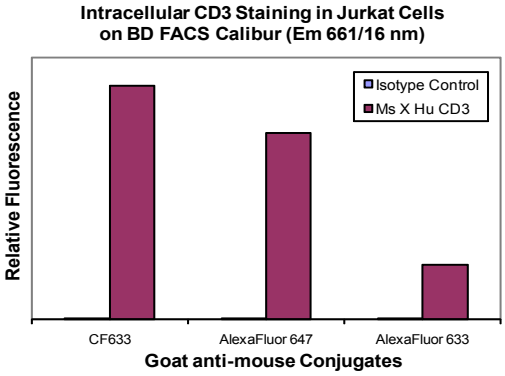


**Figure 2.** Jurkat cells were stained with intracellular CD3 or isotype control followed by goat anti-mouse IgG conjugates. Fluorescence was analyzed on a BD FACS Calibur in the FL4 channel. The bars represent the relative fluorescence of the geometric means of the population of cells.

Far-red fluorescent dyes offer the advantage of ultra sensitive detection because background signal due to autofluorescence in most biological samples is minimal in this spectral region. For many years, the cyanine dye Cy™5 has been the dye of choice for such detection. More recently, Alexa Fluor® 647 has been developed as a better alternative by having brighter fluorescence and higher photostability. Despite the improvement, Alexa Fluor® 647 still lacks sufficient photostability required for many demanding applications. On the other hand, while Alexa Fluor® 633 is photostable, its fluorescence on proteins is very weak. In fact, it has been a challenging task for dye chemists to develop a far-red fluorescent dye that is both highly fluorescent and photostable for protein and nucleic acid labeling. Using new chemistry, scientists at Biotium have successfully developed a series of far-red and near-IR dyes to overcome these challenges. With its absorption peak at 630 nm, CF™633 can be optimally excited by the 633 nm He-Ne laser or the 635 nm red diode laser with emission maximum at 650 nm. Despite its shorter emission wavelength, which often is not favored by a Cy™5-based detection window on most instruments, CF™633 is still significantly brighter than Alexa Fluor® 647 (Figure 2). However, for detections using non-laser-based excitation and a Cy™5 filter set, the full advantage of CF™633 will not be realized. In this case, we recommend CF™640R, another outstanding far-red CF™ dye that is spectrally closer to Cy™5 or other similar cyanine-based dyes. The most important advantage of CF™633 and other rhodamine-based far-red CF™ dyes are their unmatched photostability (Figure 3). The combination of superior brightness and photostability makes far-red CF™ dyes ideal choices for detections in the long wavelength region on a variety of instruments.

A list of CF™633-based products are shown in Table 1. A full selection of secondary antibodies, antibody labeling kits, and other bioconjugates including phalloidin, annexin V and α-bungarotoxin are also available for many CF™ dyes. Please visit the Biotium website at www.biotium.com for details.

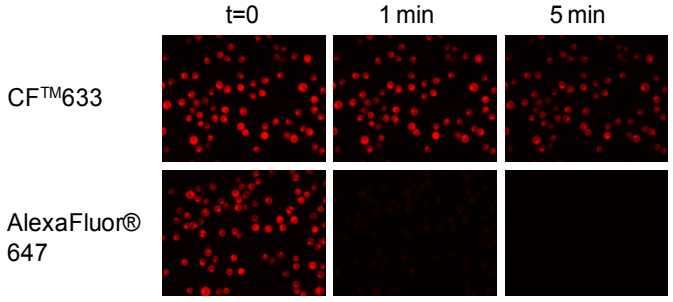


**Figure 3.** Jurkat cells were fixed, permeabilized and stained with rabbit anti-CD3 (Abcam) followed by CF™633 (Biotium) or AlexaFluor® 647 (Invitrogen) goat anti-rabbit IgG conjugates. Cells were imaged using an Olympus mercury arc lamp microscope equipped with a Cy5 filter set and CCD camera. Images were taken at t=0, 1 min and 5 min.

Biotium

# CF™633 fluorescent reagents

Table 1. CF™633 Product List

| Product Name | Size | Cat No. |
|---|---|---|
| **CF™633-Labeled Secondary Antibody Conjugates** | | |
| **Donkey Anti-Goat IgG (H+L) whole antibody**, 2 mg/mL (min X Chicken, Guinea Pig, Syrian Hamster, Horse, Human, Mouse, Rabbit, and Rat) | 0.5 mL | **20127** |
| **Donkey Anti-Mouse IgG (H+L) whole antibody**, 2 mg/mL (min X Bovine, Chicken, Goat, Guinea Pig, Syrian Hamster, Horse, Human, Rabbit, and Sheep) | 0.5 mL | **20124** |
| **Donkey Anti-Rabbit IgG (H+L) whole antibody**, 2 mg/mL (min X Bovine, Chicken, Goat, Guinea Pig, Syrian Hamster, Horse, Human, Mouse, Rat, and Sheep) | 0.5 mL | **20125** |
| **Donkey Anti-Rat IgG (H+L) whole antibody**, 2 mg/mL (min X Bovine, Chicken, Goat, Guinea Pig, Syrian Hamster, Horse, Human, Rabbit, and Sheep) | 0.5 mL | **20137** |
| **Donkey Anti-Sheep IgG (H+L) whole antibody**, 2 mg/mL (min X Chicken, Guinea Pig, Syrian Hamster, Horse, Human, Mouse, Rabbit, and Rat) | 0.5 mL | **20134** |
| **Goat Anti-Chicken IgY (IgG) (H+L) whole antibody**, 2 mg/mL (min X Bovine, Goat, Guinea Pig, Syrian Hamster, Horse, Human, Mouse, Rabbit, Rat, and Sheep) | 0.5 mL | **20126** |
| **Goat Anti-Guinea Pig IgG (H+L) whole antibody**, 2 mg/mL | 0.5 mL | **20129** |
| **Goat Anti-Human IgG (H+L) whole antibody**, 2 mg/mL (min X Bovine, Horse, and Mouse) | 0.5 mL | **20132** |
| **Goat Anti-Mouse IgG (H+L) whole antibody**, 2 mg/mL | 0.5 mL | **20120** |
| **Goat Anti-Mouse IgG (H+L) whole antibody**, 2 mg/mL (min x Human, Bovine, Horse, Rabbit, and Swine) | 0.5 mL | **20121** |
| **Goat Anti-Mouse IgG (H+L), F(ab')$_2$ fragment**, 2 mg/mL | 0.25 mL | **20130** |
| **Goat Anti-Rabbit IgG (H+L) whole antibody**, 2 mg/mL | 0.5 mL | **20122** |
| **Goat Anti-Rabbit IgG (H+L) whole antibody**, 2 mg/mL (min X Human, Mouse, and Rat) | 0.5 mL | **20123** |
| **Goat Anti-Rabbit IgG (H+L), F(ab')$_2$ fragment**, 2 mg/mL | 0.25 mL | **20131** |
| **Goat Anti-Rat IgG (H+L) whole antibody**, 2 mg/mL (min X Human, Bovine, Horse, and Rabbit) | 0.5 mL | **20133** |
| **Goat Anti-Swine IgG (H+L) whole antibody**, 2 mg/mL | 0.5 mL | **20138** |
| **Rabbit Anti-Goat IgG (H+L) whole antibody**, 2 mg/mL | 0.5 mL | **20128** |
| **Rabbit Anti-Mouse IgG (H+L) whole antibody**, 2 mg/mL (min X Human) | 0.5 mL | **20136** |
| **Rabbit Anti-Rat IgG (H+L) whole antibody**, 2 mg/mL (min X Human) | 0.5 mL | **20135** |
| **Other CF™633-Labeled Products** | | |
| **Annexin V**, 50 µg/mL | 0.5 mL | **29008** |
| **α-Bungarotoxin** | 0.5 mg | **00009** |
| **Phalloidin** | 300 U | **00046** |
| **Streptavidin** | 1 mg | **29037** |
| **Wheat germ agglutinin (WGA)** | 5x1 mg | **29024** |
| **CF™633 Reactive Dyes and Labeling Kits** | | |
| **CF™633, aminooxy** | 1 mg | **92053** |
| **CF™633 hydrazide** | 1 mg | **92156** |
| **CF™633 maleimide** | 1 µmole | **92026** |
| **CF™633 succinimidyl ester** | 1 µmole | **92133** |
| **CF™633 SE protein labeling kit** | 3 labelings (for 1 mg protein each) | **92217** |
| **Mix-n-Stain™ CF™633 antibody labeling kit, 1x(50-100 µg) labeling** | 1 labeling | **92237** |
| **Mix-n-Stain™ CF™633 antibody labeling kit, 1x(20-50 µg) labeling** | 1 labeling | **92257** |
| **Mix-n-Stain™ CF™633 antibody labeling kit, 1x(5-20 µg) labeling** | 1 labeling | **92277** |



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