

CF™680 and CF™680R Dyes

Two outstanding 680 nm-excitable dyes to meet different needs

Technical Summary

CF™680

Abs/Em Maxima: 681/698 nm

Extinction coefficient: 210,000

Molecular weight: 3241

Direct replacement for: Alexa Fluor® 680, Cy™5.5, IRDye® 680RD, IRDye® 680LT

CF™680R

Abs/Em Maxima: 680/701 nm

Extinction coefficient: 140,000

Molecular weight: 912

Direct replacement for: Alexa Fluor® 680, Cy™5.5, IRDye® 680RD, IRDye® 680LT

Advantages of CF™680:

- The brightest among spectrally similar 680 nm dyes
- Superior signal-to-noise ratio in immunostaining
- Highly water-soluble and pH-insensitive

Advantages of CF™680R:

- The most photostable 680 nm dye
- Suitable for labeling nucleic acids and small bio-molecules
- Highly water-soluble and pH-insensitive

CF™680 and CF™680R are two outstanding near-IR dyes excitable at about 680 nm with emission at about 700 nm. The two dyes each have unique properties suitable for different application needs.

CF™680 is a highly water-soluble cyanine-based dye with a molecular weight of ~3000. This dye is excellent for labeling antibodies, producing the brightest fluorescence and highest signal-to-noise ratio in immunostaining among spectrally similar dyes, such as Cy™5.5, Alexa Fluor™ 680, DyLight™ 680 and IRDye® 680. However, because of its relatively large molecular size, CF™680 is not recommended for labeling nucleic acids or relatively small biomolecules, for which our CF™680R is better suited.

CF™680R is a novel rhodamine-based dye with a relatively small molecular weight of 912. The dye is highly fluorescent and, more importantly, extremely photostable. Rhodamine dyes are traditionally known to be bright and photostable. However, it has been a synthetic challenge to make functional rhodamine dyes with long wavelengths and high water solubility necessary for bio-labeling. Scientists at Biotium have overcome the challenge and invented a new way to make highly water soluble, bright and photostable rhodamine dyes with wavelengths ranging from red to near-IR. These dyes are excellent for labeling proteins, nucleic acids and small bio-molecules. They are ideal for confocal microscopy, single molecule-based imaging and other applications that demand both brightness and photostability.

A list of CF™680- and CF™680R-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.

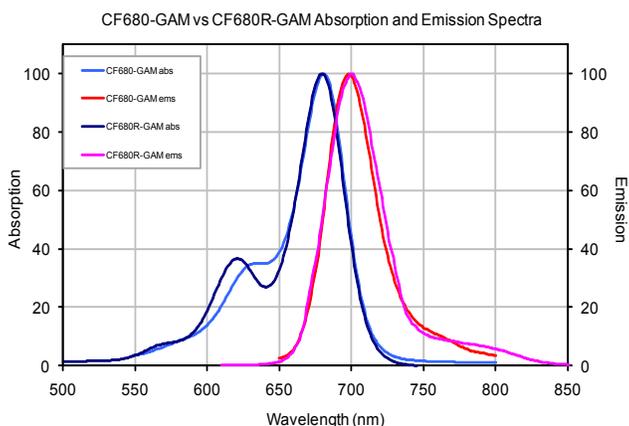


Figure 1. Absorption and emission spectra of CF™680 and CF™680R conjugated to goat anti-mouse IgG, respectively, in PBS.

APPLICATIONS

In Vivo Imaging

CF reactive dyes and kits for small animal imaging

Flow Cytometry

Superior non-tandem conjugates for cell staining

Western blotting

Perform Westerns with highly cross-adsorbed antibodies to minimize cross-reactivity and background

Microscopy

Bright and photostable antibodies or reactive dyes for multiple labeling procedures

Protein Labeling

Reactive dyes and kits for custom conjugations

Please also see our other superior near-IR CF™ dyes, including CF™750, CF™770 and CF™790.



Biotium, Inc.
3159 Corporate Place, Hayward, CA 94545
www.biotium.com
US orders: 1-800-304-5357

CF™680 and CF™680R Fluorescent Reagents

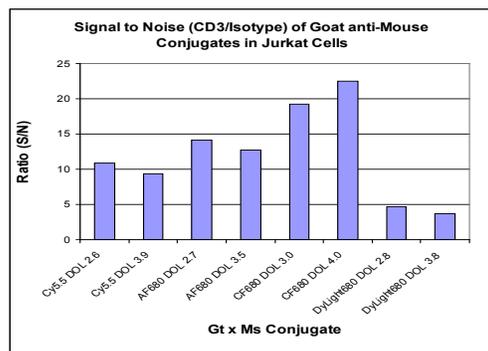


Figure 2. Intracellular staining of Jurkat cells was performed with mouse anti-human CD3 antibody or isotype control followed by 1 mg of goat anti-mouse IgG conjugates. Fluorescence was detected by a BD FACS Calibur in the FL4 channel. The bars represent the signal-to-noise ratio of CD3 positive fluorescence to isotype for conjugates with similar degrees of labeling (DOL).

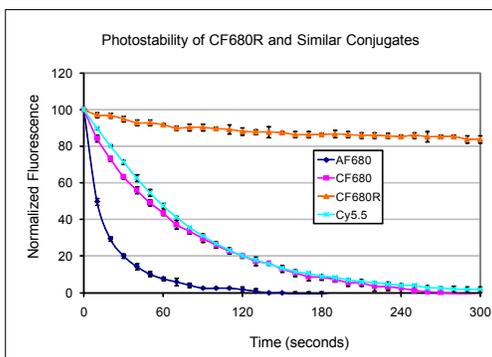


Figure 3. Photostability comparison by microscopy. Jurkat cells were stained with mouse anti-CD3 followed by CF™680R (Biotium), AlexaFluor® 680 (Invitrogen) or Cy™5.5 (GE Healthcare) goat anti-mouse IgG conjugates. Cells were imaged using an Olympus mercury arc lamp microscope equipped with a Cy5 filter set and CCD camera. The graph illustrates relative fluorescent intensities of sequential images taken every 10 seconds for 5 minutes.

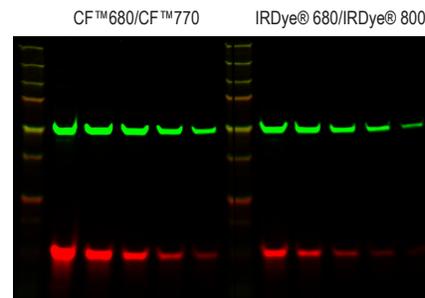


Figure 4. Near-IR CF™680 and CF™770 for two-color Western blotting. Two-fold dilutions of HeLa cell lysate were run on an acrylamide gel, transferred to a nitrocellulose membrane and probed with mouse alpha-tubulin and rabbit COX IV primary antibodies followed by goat anti-mouse CF™770 or IRDye® 800 (green) and goat anti-rabbit CF™680 or IRDye® 680 (red) at the same final concentrations. After probing, membranes were dried and scanned using an Odyssey® infrared imaging system (LI-COR Biosciences). Quantitation of the bands showed approximately a 3.5-fold higher fluorescence intensity of CF™ dyes compared to the respective IRDye® secondary antibodies (LI-COR).

If you are looking for an antibody conjugate not listed in our current catalog, please let us know. We may be able to add it as a new product, or perform a custom conjugation for you.

Listed products are for research use only. Not for use in diagnostic or therapeutic procedures. CF is a trademark of Biotium; CF dye technologies are covered by pending US and international patents. Alexa Fluor is registered trademark of Invitrogen. Cy is trademark of GE Healthcare. LI-COR, ODYSSEY, and IRDYE are trademarks or registered trademarks of LI-COR, Inc. in the United States and other countries.

Table 1. CF™680 and CF™680R Product List

CF™680- and CF™680R-Labeled Secondary Antibody Conjugates		
Product Name	Size	Cat No.
CF™680 Donkey Anti-Goat IgG (H+L) whole antibody, 2mg/mL (min X Chicken, Guinea Pig, Syrian Hamster, Horse, Human, Mouse, Rabbit, and Rat)	0.25 mL	20060
CF™680R Donkey Anti-Goat IgG (H+L) whole antibody, 2mg/mL (min X Chicken, Guinea Pig, Syrian Hamster, Horse, Human, Mouse, Rabbit, and Rat)	0.25 mL	20196
CF™680R 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)	0.25 mL	20194
CF™680R 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)	0.25 mL	20195
CF™680 Donkey Anti-Sheep IgG (H+L) whole antibody, 2mg/mL (min X Chicken, Guinea Pig, Syrian Hamster, Horse, Human, Mouse, Rabbit, and Rat)	0.25 mL	20062
CF™680 Goat Anti-Mouse IgG (H+L) whole antibody, 2 mg/mL (min x Human, Bovine, Horse, Rabbit, and Swine)	0.25 mL	20065
CF™680 Goat Anti-Mouse IgG (H+L), F(ab') ₂ fragment, 2 mg/mL	0.25 mL	20063
CF™680R Goat Anti-Mouse IgG (H+L) whole antibody, 2 mg/mL (min x Human, Bovine, Horse, Rabbit, and Swine)	0.25 mL	20192
CF™680 Goat Anti-Rabbit IgG (H+L) whole antibody, 2 mg/mL (min X Human, Mouse, and Rat)	0.25 mL	20067
CF™680 Goat Anti-Rabbit IgG (H+L), F(ab') ₂ fragment, 2 mg/mL	0.25 mL	20064
CF™680R Goat Anti-Rabbit IgG (H+L) whole antibody, 2 mg/mL (min X Human, Mouse, and Rat)	0.25 mL	20193
CF™680 Goat Anti-Rat IgG (H+L) whole antibody, 2 mg/mL (min X Human, Bovine, Horse, and Rabbit)	0.25 mL	20069
CF™680 Rabbit Anti-Goat IgG (H+L) whole antibody, 2 mg/mL	0.5 mL	20068

CF™680 and CF™680R Reactive Dyes and Labeling Kits		
Product Name	Size	Cat No.
CF™680 succinimidyl ester	1 mmole	92139
CF™680 maleimide	1 mmole	92029
CF™680R succinimidyl ester	1 mmole	92107
CF™680R maleimide	1 mmole	92032
CF™680R SE protein labeling kit	3 labelings (for 1 mg protein each)	92226
CF™680 SE protein labeling kit	3 labelings (for 1 mg protein each)	92220
Mix-n-Stain CF™680 antibody labeling kit, for labeling 5-20 ug antibody	1 labeling	92282
Mix-n-Stain CF™680 antibody labeling kit, for labeling 20-50 ug antibody	1 labeling	92262
Mix-n-Stain CF™680 antibody labeling kit, for labeling 50-100 ug antibody	1 labeling	92240
Mix-n-Stain CF™680R antibody labeling kit, for labeling 5-20 ug antibody	1 labeling	92283
Mix-n-Stain CF™680R antibody labeling kit, for labeling 20-50 ug antibody	1 labeling	92263
Mix-n-Stain CF™680R antibody labeling kit, for labeling 50-100 ug antibody	1 labeling	92246
VivoBrite rapid antibody labeling kit for small animal in vivo imaging, CF680 SE	3 labelings (1-2 mg IgG each)	92160

CF™680- and CF™680R Bioconjugates		
Product Name	Size	Cat No.
Annexin V, CF™680 conjugate, lyophilized	25 ug	29007
CF™680 α-Bungarotoxin	0.5 mg	00008
CF™680R α-Bungarotoxin	0.5 mg	00003
CF™680R Phalloidin	300 U	00048
CF™680 Wheat Germ Agglutinin (WGA)	5 mg	29025
CF™680R Wheat Germ Agglutinin (WGA)	5 x 1 mg	29025