STAR FLUOR Reactive dyes

Succinimidyl Esters Amine-Reactive Dyes

Overview

STAR FLUOR fluorescent detection reagents are extraordinarily bright and photostable. They have many applications such as immunofluorescent assays, flow cytometry and fluorescence imaging.

STAR FLUOR products design make them as bright and photostable as other dyes, including Alexa Fluor® dyes from ThermoFisher. STAR FLUOR products cover the most commonly employed excitation and emission filter sets (see table 1).

Features

- High brightness for more sensitive detection
- Excellent photostability and water solubility
- Directly replaces your Alexa Fluor® dye
- From the UV/VIS up to the IR spectral region

STAR FLUOR dye	Absorption max (nm)	Emission max (nm)	Exc source (nm)	Em color	ε ($M^{-1}cm^{-1}$)
STAR FLUOR 405 X	415	520	Violet 405	blue	26.000
STAR FLUOR 488	494	520	Blue 488	green	74.000
STAR FLUOR 550	553	568	Green 532	orange	150.000
STAR FLUOR 645	648	667	Red 633	Far red/near IR	250.000
STAR FLUOR 680	677	703	Far-red 680	Near IR	195.000
STAR FLUOR 770	774	794	IR 785	Near IR/IR	270.000

Table 1: STAR FLUOR dyes across the spectrum

Cyanagen offers an ever-expanding variety of STAR FLUOR products. This group of product lines include STAR FLUOR secondary antibody conjugates, STAR FLUOR reactive dyes for covalent labeling of biomolecules as well as dedicated STAR FLUOR antibody labeling kits and DNA/RNA labeling tools. Furthermore, Cyanagen offers custom solutions which are made-to-measure for each client.

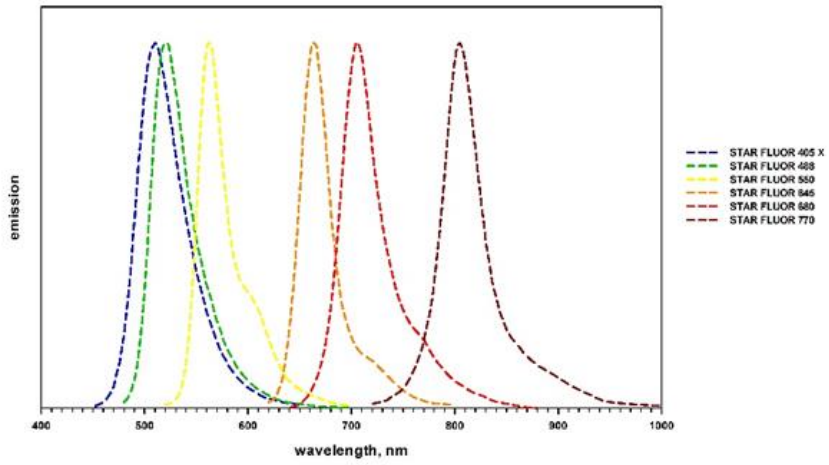

Fig 1. Emission spectra of STAR FLUOR dyes

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STAR FLUOR Highly Cross-Adsorbed Secondary antibodies

STAR FLUOR secondary antibodies are the perfect choice for cell imaging, offering an outstanding performance:

- Superior brightness for the detection of low expressed proteins with high sensitivity
- Excellent photostability for prolonged and repeated exposure.

STAR FLUOR antibodies are highly cross-adsorbed, so ensuring minimal cross-reactivity when using antibodies from different host species. Secondary antibodies conjugated with dyes in the InfraRed region (STAR FLUOR 680 and STAR FLUOR 770) allow reduced scattering and enhanced tissue penetration depth.

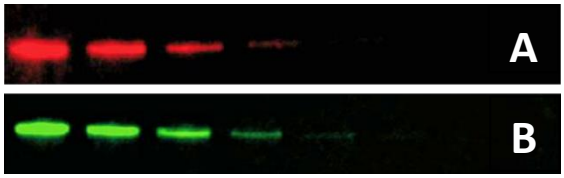

Fig. 2 Fluorescent Western blotting detection of Human Transferrin with Rabbit anti-human transferrin primary antibody and Goat anti-Rabbit STAR FLUOR 550 (A), Goat anti-Rabbit Star Fluor 645 (B). Imager: ImageQUANT™ LAS 4000 GEHC

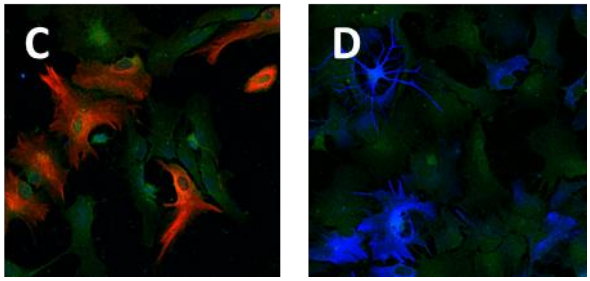

Fig.3 (C) Immunohistochemical staining on mouse glia of GFAP (red) using anti-GFAP Primary Antibody and STAR FLUOR 550 Goat anti-Rabbit and actin (green) using anti-actin Primary Antibody and STAR FLUOR 488 Goat anti-Mouse. TOPRO-3 counterstain (blue) is used to stain nuclei. (D) Immunohistochemical staining on mouse glia of GFAP (blue) using anti-GFAP Primary Antibody and STAR FLUOR 645 Goat anti-Rabbit and actin (green) using anti-actin Primary Antibody and STAR FLUOR 488 Goat anti-Mouse.

STAR FLUOR antibody labeling kits

STAR FLUOR antibody labeling kits offer an efficient and reproducible method for the fluorescent conjugation of your antibody. Besides antibodies/proteins, the labeling kit may also be used to conjugate all amine-containing biomolecule.

STAR FLUOR antibody labeling kits contain the ready to use reactive dye, purification column and required buffers to ensure reproducible procedures.

Antibodies labeled with STAR FLUOR dyes are suitable for use in techniques such as Western Blotting, fluorescence microscopy and flow cytometry.

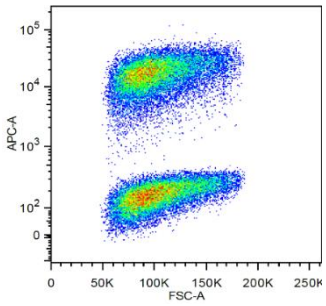

Fig. 4 Flow cytometric analysis of CD-20 staining on EHEB cells. Pseudo-color analysis of the pool of cells stained with anti-CD20 Rabbit Monoclonal Primary Antibody and Star Fluor 645 Goat anti-Rabbit labeled with STAR FLUOR 645 Antibody labeling kit or with unlabeled Goat anti-Rabbit.

STAR FLUOR Reactive dyes

STAR FLOUR Reactive dyes are available in the reactive N-hydroxy succinimide (NHS) ester form, also commonly known as succinimidyl esters (SE). The succinimidyl esters are the most popular and widely employed labeling tools available today to react with amine groups, i.e. lysine residues, present in antibodies, proteins, and with any amino-containing or amino-modified biomolecule.

Conjugates created with STAR FLUOR dyes exhibit high brightness and photostability.

Cyanagen offers his expertise for the conjugation of diverse biomolecules with STAR FLUOR dyes.

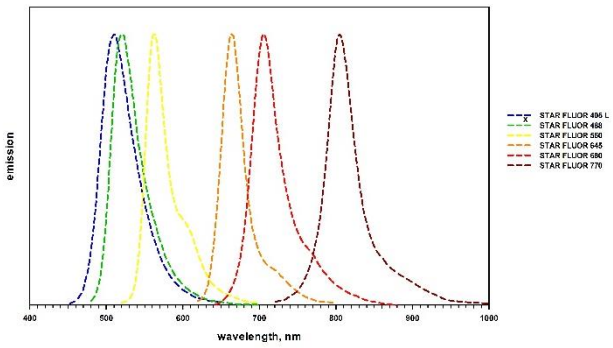

Fig.4 Emission spectra of STAR FLUOR Reactive Dyes

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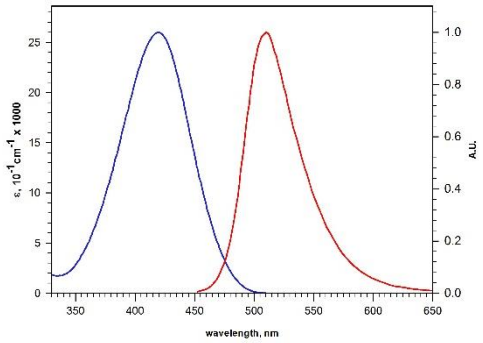
STAR FLUOR 405 X

STAR FLUOR 405 X is a Large Stokes Shift dye, precisely optimized for use in multicolour flow cytometry applications. STAR FLUOR 405 L is ideally excited by the violet 405nm laser line and emits strongly in the green region (FITC channel). Besides flow cytometry, STAR FLUOR 405X may also be used in super-resolution technics such as STED and STORM microscopy.

Features:

- Brighter than BD Horizon™ V500
- Reduced spill over into the FITC channel
- Extends your multicolour panel

Fluorophore label: STAR FLUOR 405 X dye
Ex/Em: 415/520 nm
Extinction coefficient: 26,000 $cm^{-1}M^{-1}$
Spectrally similar dyes: BD Horizon™ V500, AmCyan



STAR FLUOR 488

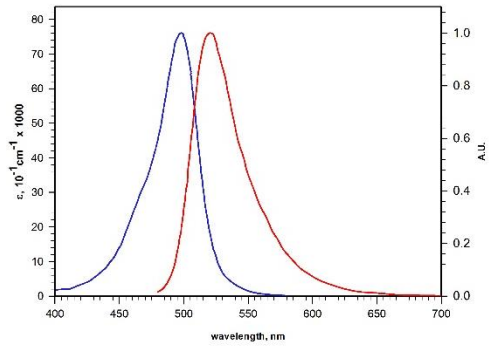
STAR FLUOR 488 is a bright, highly photostable green-emitting fluorophore for the 488nm Argon laser line. It is as bright as Alexa Fluor 488 as well as other spectrally similar fluorophores. STAR FLUOR 488 is highly water-soluble and pH insensitive (pH4-10) and ideal for the labelling of biomolecules including antibodies, proteins and peptides. Conjugates of STAR FLUOR 488 show extremely high fluorescence and are therefore ideal for extremely sensitive detection.

STAR FLUOR 488 is available already conjugated to a variety of antibodies (and expanding) for diverse applications. Reactive dye formulations, as well as antibody labelling kits, are also available.

Features:

- As bright as Alexa Fluor® 488
- High water solubility and pH insensitive
- Extreme photostability

Fluorophore label: STAR FLUOR 488 dye
Ex/Em of the conjugate: 494/517 nm
Extinction coefficient: 73,000 $cm^{-1}M^{-1}$
Spectrally similar dyes: Alexa Fluor® 488, DyLight™ 488, CF®488, FITC, Fluorescein



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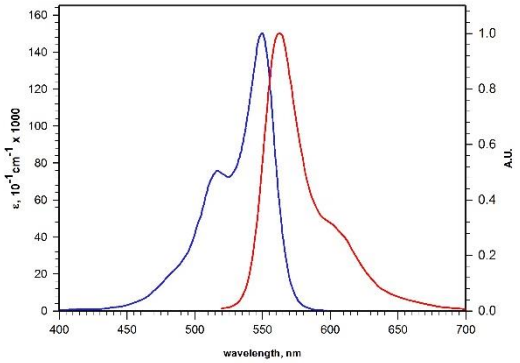
STAR FLUOR 550

STAR FLUOR 550 is a bright emitting dye in the orange spectral region. The fluorescent core structure belongs to the cyanine-based fluorophores, with enhanced water solubility and fluorescence characteristics. STAR FLUOR 550 finds widespread use in many fluorescent detection applications, including Western Blotting, imaging and flow cytometry. STAR FLUOR 550 is as bright as Alexa Fluor® 555 and brighter than tetramethylrhodamine (TAMRA) as well as Amersham Cy3 dye.

Features:

- The best choice in the orange emitting spectral region
- Excellent performance in multiplex applications together with STAR FLUOR 645.

Fluorophore label: STAR FLUOR 550 dye
Ex/Em of the conjugate: 553/568 nm
Extinction coefficient: 150,000 $cm^{-1}M^{-1}$
Spectrally similar dyes: Alexa Fluor® 555, Cy3 dye, DyLight™ 549 and TAMRA



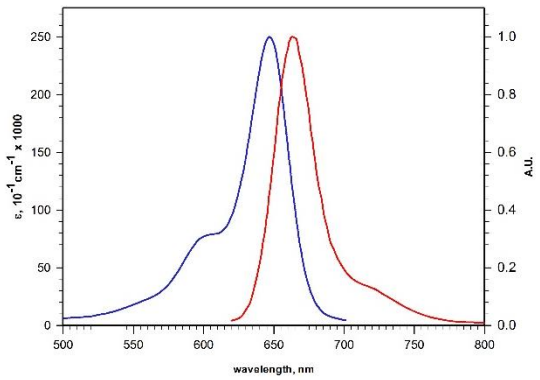
STAR FLUOR 645

STAR FLUOR 645 is the reagent of choice in the far red region and is ideally excited by the 633 nm laser line. High brightness and photostability provide stable signal output in any fluorescent detection assay. STAR FLUOR 645 belongs to the cyanine class of dyes with superior photophysical properties and is as bright as Alexa Fluor® 647.

Features:

- As bright as Alexa Fluor® 647
- High water solubility and pH insensitive
- The most popular tool in any multicolour application

Fluorophore label: STAR FLUOR 645 dye
Ex/Em of the conjugate: 648/667 nm
Extinction coefficient: 250,000 $cm^{-1}M^{-1}$
Spectrally similar dyes: Alexa Fluor® 647, Cy5 dye, DyLight™ 649



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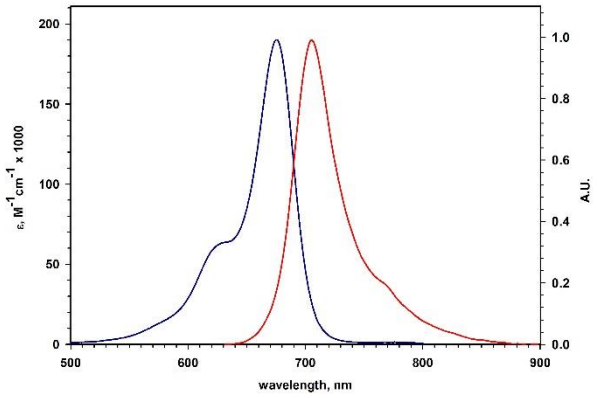
STAR FLUOR 680

STAR FLUOR 680 generates bright and stable fluorescence emission in the 700 nm near-infrared spectral region. Extreme water solubility, pH insensitivity and excellent photostability make STAR FLUOR 680 the reagent of choice for any near-IR based imaging system. STAR FLUOR 680 shows low background in the near-infrared region resulting in an excellent signal-to-noise ratio.

Features:

- High water solubility and fluorescence emission.
- Excellent signal-to-noise ratio.
- As bright as IRDye 680LT

Fluorophore label: STAR FLUOR 680 dye
Ex/Em of the conjugate: 677/703 nm
Extinction coefficient: 195,000 $cm^{-1}M^{-1}$
Spectrally similar dyes: Alexa Fluor® 680, IRDye 680LT, Cy5.5 dye



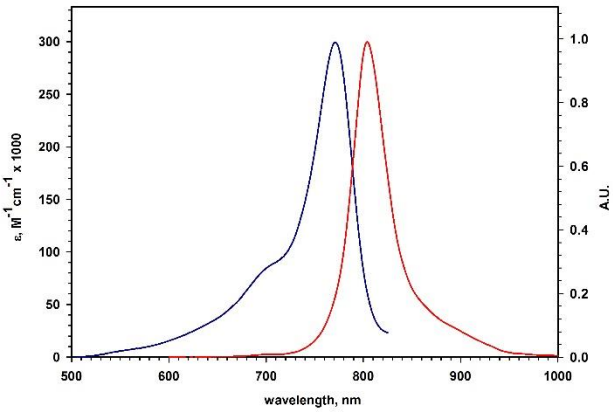
STAR FLUOR 770

STAR FLUOR 770 near-infrared fluorescent reagents are ideal for the 800 nm detection channel. STAR FLUOR 770 is highly water-soluble and exhibits excellent fluorescence stability for near IR detection in western blotting, microscopy and in-vivo imaging. STAR FLUOR 770 is spectrally similar to indocyanine green (ICG) and IRDye800CW. The fluorophore is highly suited for applications in multicolour western blotting, small animal and in vivo imaging. STAR FLUOR 770 is as bright as Alexa Fluor® 790 and IRDye800CW.

Features:

- Excellent water solubility and stable fluorescence emission.
- The longest wavelength STAR FLUOR dye available.
- Ideal for multicolour applications

Fluorophore label: STAR FLUOR 770 dye
Reactive group:
Reactivity:
Ex/Em of the conjugate: 774/794 nm
Extinction coefficient: 270,000 $cm^{-1}M^{-1}$
Spectrally similar dyes: Alexa Fluor® 790, IRDye 800CW, Cy7 dye



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