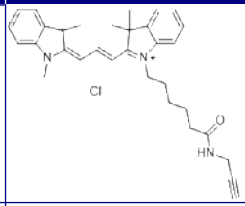
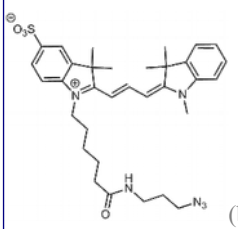
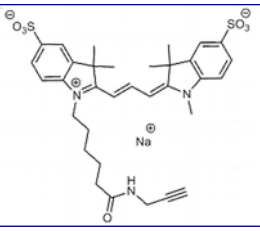
FT-1A6320

CY$_{anine}$ Alkyne

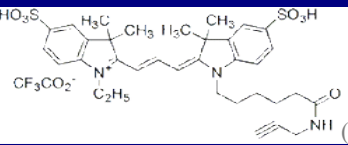
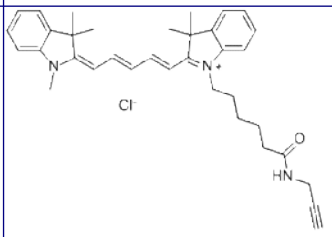
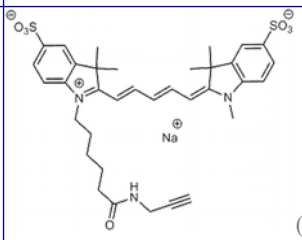
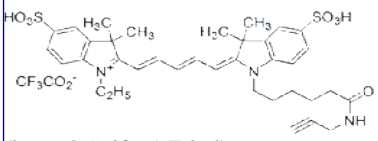
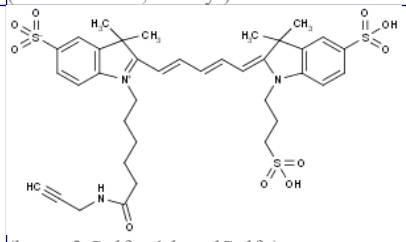
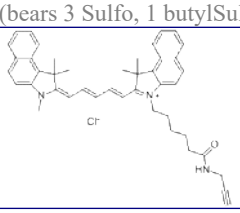
CY$_{anine}$ fluorophores functionalized for labeling biomolecules by click chemistry

Products Description

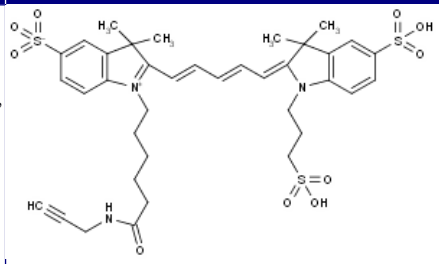
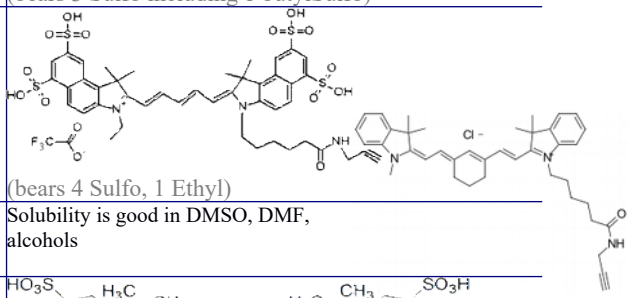
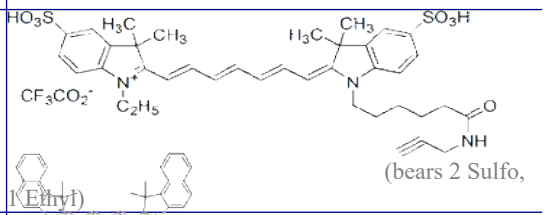
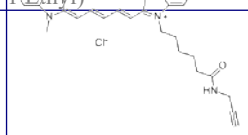
The table below gives main physical and fluorescence characteristics of the activated dyes.

Product name cat.number/qty*	**MW** (g·mol^{-1}) **+added MW**	**λ abs./em.** (nm)	**mol. abs.** (M^{-1}cm^{-1})	Comment, structure
CY$_{anine}$3 – Alkyne (M) FP-1A6320, 1mg Red powder Soluble in DMF, DMSO, dichloromethane), insoluble in water	530.14	555 / 570	150 000 QY: 0.31	
Mono-Sulfo-CY$_{anine}$3 – Alkyne (M) FP-1C4620, 1mg Soluble in DMF, DMSO, MetOH, EtOH and acetonitrile. Poor in water.	573.75	550 / 567	96 800 QY: 0.15	 (bears 1 sulfo, 1 methyl)
DiSulfo-CY$_{anine}$3 – Alkyne, Na$^+$ salt (M) FP-1C4630, 1mg Soluble in water and polar organic solvent (DMF, DMSO), insoluble in organic solvents (DCM, chloroform)	675.79	548 / 567	162 000 QY: 0.15	
DiSulfo-CY$_{anine}$3 – Alkyne, K$^+$ salt (M) FP-0B8390, 1mg	691.9	548/563		EC:162000; QY:0.1; CF260:0.03; CF280:0.06 Solubility is good in Water, DMF, DMSO

FT-1A6320

Product name cat.number/qty*	**MW** ($g \cdot mol^{-1}$) **+added MW**	**λ abs./em.** (nm)	**mol. abs.** ($M^{-1}cm^{-1}$)	Comment, structure
DiSulfo-CY$_{anine}$3 – Alkyne, TFA$^-$ salt (M) FP-LQV030, 1mg	781.86	555 / 565		 (2 sulfo, 1 ethyl)
Tri-Sulfo-CY$_{anine}$3-Alkyne (M) FP-1C8831, 5mg	761.93	555 / 580	151 000	(3 Sulfo, 1 butylSulfo
CY$_{anine}$5 – Alkyne (M) FP-OO5590, 1mg dark blue powder / solution Solubility is good in dichloromethane, DMF, DMSO, alcohols, low in water	556.18 (520.3)	646 / 662	250 000 QY: 0.2	
Di-Sulfo-CY$_{anine}$5 – Alkyne, Na salt (M) FP-1C4640, 1mg Soluble in water and polar organic solvent (DMF, DMSO), insoluble in organic solvents (DCM, chloroform)	717.94 (701.83)	646 / 662	271 000 QY: 0.28	 (bears 2 Sulfo, 1 Methyl) Also available: SJI060
Di-Sulfo-CY$_{anine}$5 – Alkyne, K salt FP-SJI060, 1mg Very high solubility in water	717.94	649/662	271 000 QY: 0.2	(bears 2 Sulfo) QY:0.28; CF260:0.04; CF280:0.04 – Solubility is very good in Water, DMF, DMSO
Di-Sulfo-CY$_{anine}$5 – Alkyne, TFA salt (M) FP-LQV090, 1mg	807.90	649 / 665		 (bears 2 Sulfo, 1 Ethyl)
Tri-Sulfo-CY$_{anine}$5-Alkyne (M) FP-1C8841, 5mg Soluble in DMSO, DMF, MeOH, Water Abs/Em = 646/663 nm; EC: 250000	787.98	646 / 663	271 000	 (bears 3 Sulfo, 1 butylSulfo)
CY$_{anine}$5.5 – Alkyne, Cl$^-$ (M) FP-SJH910, 1mg	656.30	673 / 707	209 000 QY : 0.2	

FT-1A6320

Product name cat.number/qty*	**MW** ($g \cdot mol^{-1}$) **+added MW**	**λ abs./em.** (nm)	**mol. abs.** ($M^{-1}cm^{-1}$)	Comment, structure
Tri-Sulfo-CY$_{anine}$5.5 – Alkyne, TFA salt (M) FP-MRV061, 5mg ; Soluble in DMSO, DMF, MeOH, Water Abs/Em = 678/694 nm,	1257.69 (TEA salt) 954.12(protonated)	678 / 694	251 000 EC: 190000; CF_{260}: 0.05, CF_{280}: 0.18	 (bears 3 Sulfo including 1 butylSulfo)
Tetra-Sulfo-CY$_{anine}$5.5 – Alkyne, TFA salt (M) FP-LQV320, 1mg	1068.14	678 / 701		 (bears 4 Sulfo, 1 Ethyl)
CY$_{anine}$7 –Alkyne, Cl salt (M) FP-WZE120, 1mg	622.28 [+586.4]	749 / 776	"	Solubility is good in DMSO, DMF, alcohols
DiSulfo-CY$_{anine}$7 – Alkyne, TFA salt (M) FP-LQV250, 1mg Solubility in DMSO	818.91	749 / 776		 (bears 2 Sulfo, 1 Ethyl)
Tri-Sulfo-CY$_{anine}$7 – Alkyne, TFA salt (M) FP-1I1220, 1mg FP-1I1221, 5mg Soluble in DMSO, DMF, MeOH, Water Abs/Em = 753/775 nm, EC: 255000; CF_{260}: 0.05, CF_{280}: 0.05	1313.80 (TEA salt), 1010.23(protonated)	753/775	255 000	 (3Sulfo, 1 Buty)

Storage: –20°C for long term, protected from light (M)

Cyanine fluorophores

A variety of **Cyanine dyes** has been used to label proteins, nucleic acids and other biomolecules for fluorescence techniques (imaging, biochemical analysis). They replace advantageously the conventional fluorochromes such as Fluorescein(FITC) and rhodamines (TRITC, RRX).

CY$_{anine}$3 can replace orange-fluorescent dyes, like Tetramethylrhodamine (TRITC).
Cy$_{anine}$3 is one of the most broadly used fluorophores which can be detected by various fluorometers, imagers, and microscopes. Due to inherently high extinction coefficient, this dye is also easily detected by naked eye on gels, and in solution. See also alternative superior dye: FluoProbes547H.
CY$_{anine}$3.5 can replace SulfoRhodamine 101.
See also alternative superior dye:FluoProbes594.
CY$_{anine}$5 can replace far red red fluorescent dyes.
During last years, CY$_{anine}$5 flurophore has become an incredibly popular label in life science research and diagnostics.

FT-1A6320
Fluorophore emission has maximum in red region, where many CCD detectors have maximum sensitivity, and biological objects have low background. Dye color is very intense, therefore quantity as small as 1 nanomol can be detected in gel electrophoresis by naked eye. See also alternative superior dye: FluoProbes647H
CY$_{anine}$5.5 can replace near infrared fluorescent dyes.
See also alternative superior dye: FluoProbes682.
CY$_{anine}$7 is a near infrared red fluorophores used in in vivo imaging applications.
See also alternative superior dye: FluoProbes752.
CY$_{anine}$7.5 is a near infrared red fluorophores used for *in vivo* imaging applications.
See also alternative superior dye: FluoProbes800.

Sulfo – CY$_{anine}$ dyes are water-soluble derivates of the CY$_{anine}$ dyes. DiSulfonated compounds are the most classic, but some tri- and quadri-sulfonated forms are available as well, for even higher hydrosolubility.

Click Chemistry

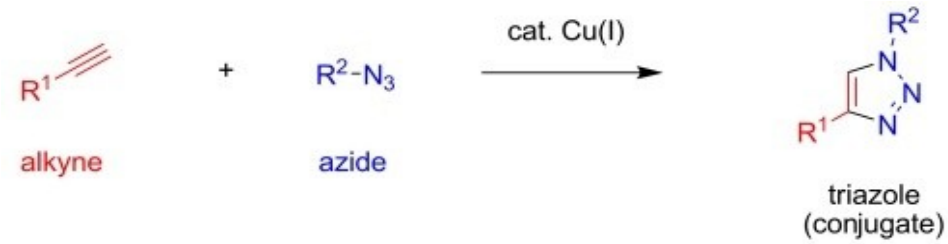
Alkyne reacts with Azide groups (standard Click reaction using Cu catalyzer).
Among the vast variety of organic reactions, Click Chemistry has been selected as a conjugation chemistry reaction because of several advantages:

►**It is very selective.** Click Chemistry reaction takes place only between azide and alkyne components. It is does not interfere with most any other organic groups present in DNA and proteins being labeled, such as amino and carboxy groups.
►**There are no azides and alkynes in native biomolecules.** These groups should be specially introduced into DNA and proteins. Alkyne-containing DNA can be prepared with alkyne phosphoramidite± during standard oligo synthesis. Proteins labeled with azide and alkyne can be made using azide activated ester± and alkyne activated ester±.
►**Click Chemistry takes place in water.** Aqueous DMSO, DMF, acetonitrile, alcohols, or pure water and buffers can be used for the reaction. The reaction is biocompatible and can take place in living cells.
►**Reaction is quick and quantitative.** Click Chemistry is a tool that allows preparation of nanomoles of conjugates in diluted solutions.
►**The reaction is pH-insensitive.** Unlike reaction of NHS esters with amines, and some other conjugation chemistries, there is no need to control pH in reaction mixture. There is no need to add any special buffer, acid or base - Click Chemistry works well in pH interval of 4-11.

Click Chemistry thus became a tool for universal modification of DNA, proteins, conjugate preparation, and fluorescent labeling. This is where our reagents come to help: you can perform easy preparation of conjugates in your lab.

- **Click Chemistry reaction – CuAAC**

Click Chemistry is a reaction between azide and alkyne yielding covalent product - 1,5-disubstituted 1,2,3-triazole. This process is also known as CuAAC - Cu catalyzed alkyne azide cycloaddition.



The catalyst is often introduced as Cu-TBTA (**Copper(II)-TBTA complex** FY2780).

General protocols for standard click chemistry (Cu-catalyzed)

See the technical sheet FT-FY2780 for more information on Click Chemistry and protocols.

References

- Ngo et al. (2012) State-selective metabolic labeling of cellular proteins. ACS Chemical Biology. 7(8) :1326.
- Rubino et al. (2012) Chemoselective Modification of Viral Surfaces via Bioorthogonal Click Chemistry. J. Vis. Exp. 66 :4246. Yao et al. (2012) Fluorophore Targeting to Cellular Proteins via Enzyme-Mediated Azide Ligation and Strain-Promoted Cycloaddition. J. Am. Chem. Soc. 134 :4246.
- Best et al. (2009) Click chemistry and bioorthogonal reactions: unprecedented selectivity in the labeling of biological molecules. Biochemistry. 48(28) :6571.
- Ning et al. (2008) Visualizing metabolically labeled glycoconjugates of living cells by copper-free and fast Huisgen cycloaddition. Anweg. Chem. Int. Ed. 47(12) :2253.
- Baskin et al. (2007) Copper-free click chemistry for dynamic in vivo imaging. PNAS. 104(43) :16793.
- Dieterich et al. (2007) Labeling, detection and identification of newly synthesized proteomes with bioorthogonal non-canonical amino acid tagging. Nature Protocols. 2(3) :532

Related products

* Other CY$_{anine}$ dyes functionalized by **NHS** (FT-BB7493), **Maleimide** (FT-JO6660), **Azide** (FT-HO7250), **Alkyne** (FT-1A6320)**, DBCO** (FT-1A6320: CycloAlkynes, for strain-promoted Click reactions), **Tetrazine** (FT-WXS720)**, Hydrazide** (LQV050), **Amino** group (CY3AM0), **Carboxyl** group (CY3CA0). **3Dye 2D DIGE (CY2/CY3/CY5) labeling kit** (EV0870)

* Related labels
- activated by –NHS (list), i.e. FP488-NHS #BA68000
• Superior FluoProbes **fluorescent dyes**,
- activated by –Azide, i.e. FP488-Azide #YE4970
• Classic dyes such as **FAM, R110, JOE TAMRA,** and **ROX.**

Ordering information

Catalog size quantities and prices may be found at www.interchim.com/. Please inquire for bigger quantities and for any information, please ask : FluoProbes® / Interchim; Hotline : +33(0)4 70 03 73 06