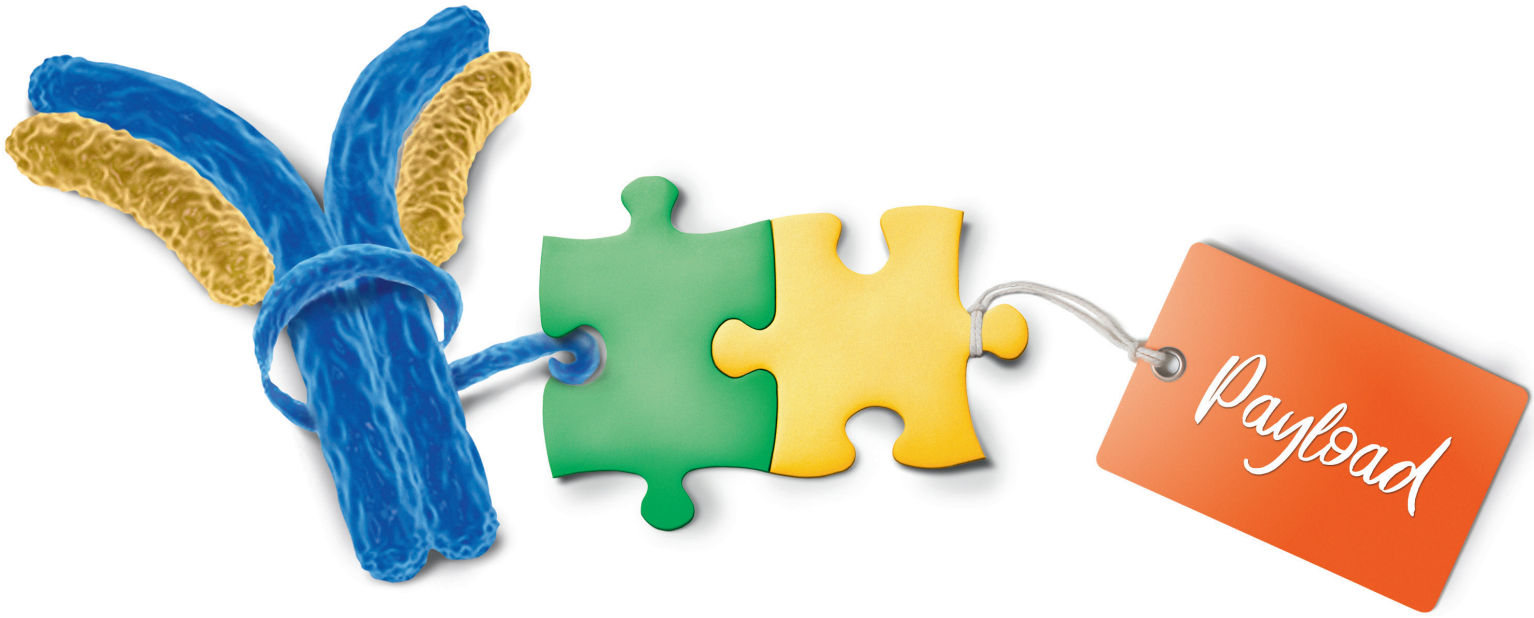
CLICK CHEMISTRY TOOLS



2019/20

Catalog & Reference Manual

- Reagents for TCO-Tetrazine Ligation
- DBCO Reagents for Cu-free Click Chemistry
- Click Chemistry Azide/Alkyne Reagents
- NEW Fluorogenic Azides Probes
- Next Generatin Azide Probes
- Metabolic Labeling Reagents
- NEW Cleavable Click Chemistry Biotin Probes
- Biotin/Streptavidin-Free Enrichment Kits and Media

Contents

General Information:

If you have a technical question about a product you received or have seen in the catalog, please send an e–mail to inquiries@clickchemistrytools.com or call us at (480)–584–3340.

Material Safety Data Sheets

MSDS are available upon request.
We can also fax or e–mail a copy. Please mention your request on the order form if needed.

Product Analysis

Purity is assayed by HPLC, LC/MS, TLC, and/or NMR.

Certificate of Analysis

A certificate of analysis (COA) will be sent with your product(s) if requested. The COA provides the test method used, the results, and the purity level of the product.

Re–Stocking Fee

Due to the cost of re–qualifying product, there is a charge of $250 for each previously un–opened vial/bottle that is returned. No previously opened product will be accepted.
Please note there are no returns on bulk quantity purchases.

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All orders are accepted by **e–mail**, **fax** or **online**. We accept telephone technical inquiries **between 8AM and 6PM**, PST, Monday through Friday. The main contact information is listed below:

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Catalog number, product description, size, and quantity

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9–7 Hongo 2–chome,
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www.kimnfriends.co.kr

Bioorthogonal Ligation Chemistry

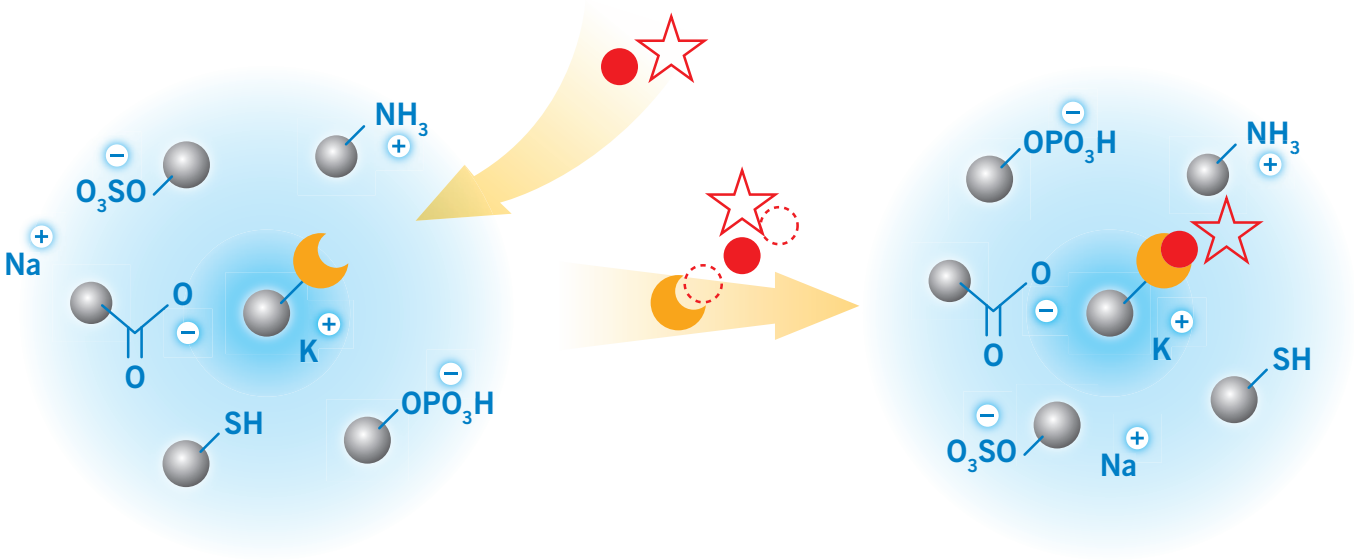


Figure 1.

The term bioorthogonal chemistry refers to any chemical reaction that can occur in the presence of other rich chemical functionalities found in biological systems without interacting or interfering with native biochemical processes. The bioorthogonally–activated components react specifically and spontaneously only with each other forming the desired conjugate. This bioorthogonal ligation strategy is outlined in **Figure 1**

In order for chemically reactive functional groups to be suitable for bioconjugation, three basic features are of high importance: reactivity, chemoselectivity, and biocompatibility. The first of these–reactivity, is clearly a prerequisite for applications performed under highly dilute conditions, for example, protein–protein conjugations. Protein–protein conjugations are often constrained to low protein concentrations (e.g. <1 mg/mL) due to limited availability of proteins and/or associated cost factors.

Reactivity can be defined by the second order rate constant for the bioorthogonal reactant pairs. The higher the 2nd order rate constant for product formation, the more efficient the conjugation at low reactant concentrations within reasonable time scales, at near neutral pH, and without having to use a large excess of either biomolecule. The relationship between 2nd order rate constants($M^{-1}s^{-1}$) for bioorthogonal reactants at 10 μM and the percent conjugate yield over time is illustrated in **Figure 2**.

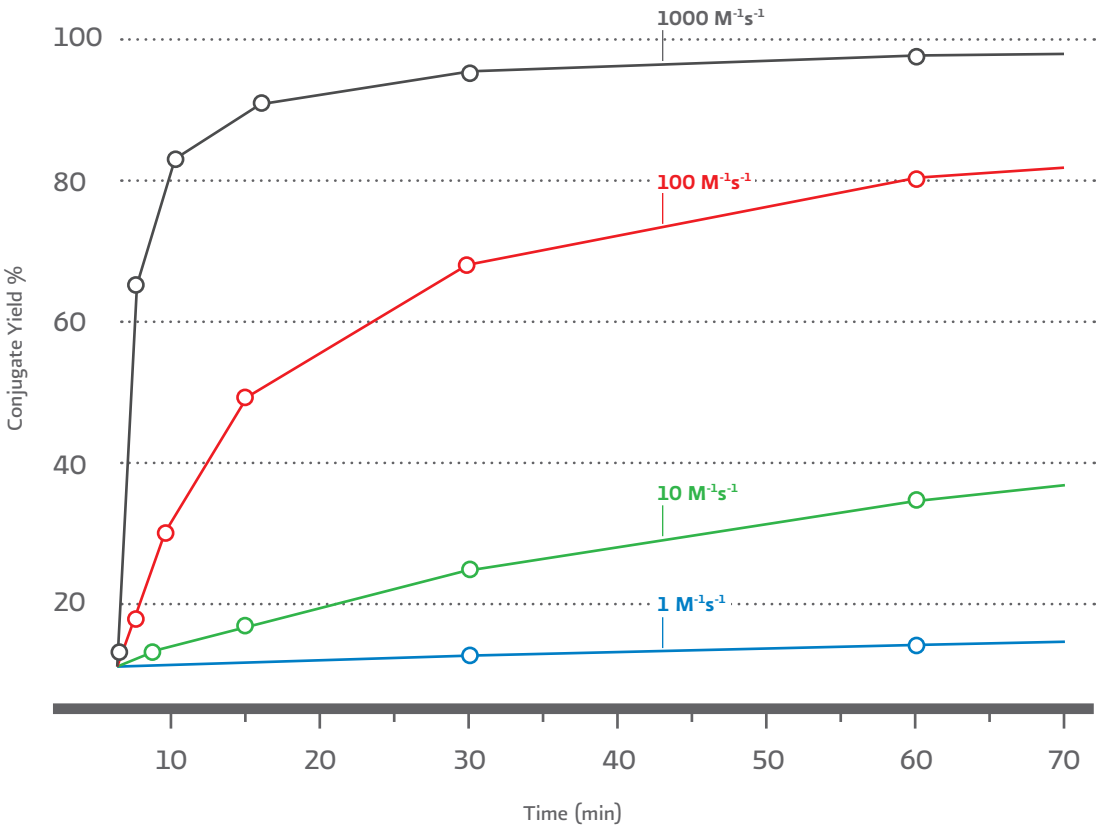


Figure 2. Simulation of 2nd order reactions at 10 μM reactants

Another important bioconjugation feature for reactants is that they be chemoselective. Namely, selective reactivity with each other while in the presence of a rich milieu of other biological functional groups (e.g. amino ($-NH_2$), carboxyl (–COOH), and/or thiol (–SH)). This important feature is often overlooked, however, lack of selectivity is the driving force behind self–conjugation (homodimer formation) via unwanted and non–selective intramolecular interactions. Lastly, it is important that chemically reactive functional groups be biocompatible.

It is crucial for ligation reactions to proceed under mild aqueous buffer condition compatible with biological molecules, without the need for catalytic reagents (e.g. Cu(I)) that are highly toxic to biological systems. Bioorthogonal chemical functionalities must remain highly reactive but stable during long–term aqueous storage, while remaining inert to high concentrations of other biological functional groups.

Unfortunately, only a few chemical transformations meet these strictly defined conditions: reactivity, selectivity, and biocompatibility. Consequently, only a small subcategory of chemical transformations are suitable for bioorthogonal ligation of highly functionalized biomolecules (e.g. proteins, nucleic acids, and sugars) in aqueous, pH neutral environments at ambient temperatures while still preserving biological function.

The choice for a particular ligation strategy suitable for a specific application is based on different factors. The use of copper–catalyzed azide–alkyne cycloaddition reaction (CuAAC) is limited to applications where the toxicity of copper is not important (e.g. peptide or oligo modification, or cell lysate labeling). In this respect, strain–promoted alkyne–azide cycloaddition reaction (SPAAC) is better suited for bioconjugation since no catalyst or additional reagents are required. However, reaction rates of SPAAC reaction are inherently low (e.g. 0.1 to 0.9 $M^{-1}s^{-1}$), limiting their use to relatively high concentration applications (e.g. protein–small molecule conjugations, cell labeling).

For applications at low biomolecule concentrations (e.g. < 5 μM), the inverse–demand Diels Alder ligation pair trans–cyclooctene–tetrazine (TCO–Tz) are the pair of choice. The chemoselective TCO–Tz ligation pairs possess ultrafast kinetics (> 800 $M^{-1}s^{-1}$) unparalleled by any other bioorthogonal ligation pair. The combination of ultrafast kinetics, selectivity, and long–term aqueous stability make TCO–Tz the ideal pair for low concentration applications such as protein–protein conjugations.

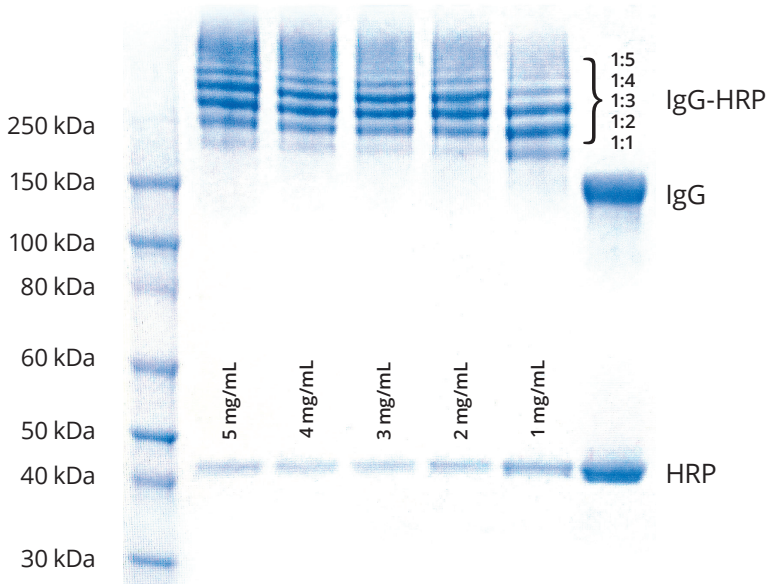
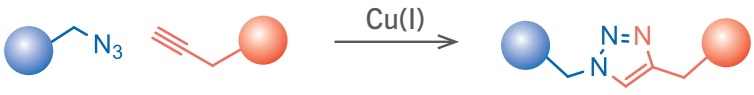


Figure 3. Typical results of IgG labeling at 1 to 5 mg/mL

Example Application

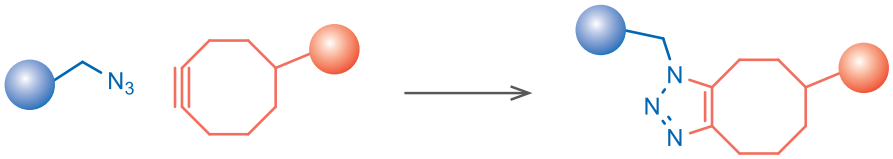
Five Goat IgG samples (100 μL at 5 mg/mL, 4 mg/mL, 3 mg/mL, 2 mg/mL and 1 mg/mL) were labeled in BupH buffer (pH 7.5) using a 20–fold molar excess of Tetrazine–PEG5–NHS ester. Similarly, 0.1 mL HRP (500 μg) at 5.0 mg/mL in BupH buffer (pH 7.5) was labeled using a 20–fold molar excess TCO–PEG4–NHS ester for 60 min. After removal of excess reagents and determining each protein concentrations 3–fold excess of HRP–TCO was added to IgG–Tetrazine at 5 mg/mL, 4 mg/mL, 3 mg/mL, 2 mg/mL and 1 mg/mL. After 60 minutes, an aliquot (1 μL) from each conjugation reaction was analyzed by SDS–PAGE.

Bioorthogonal Ligation Reactions



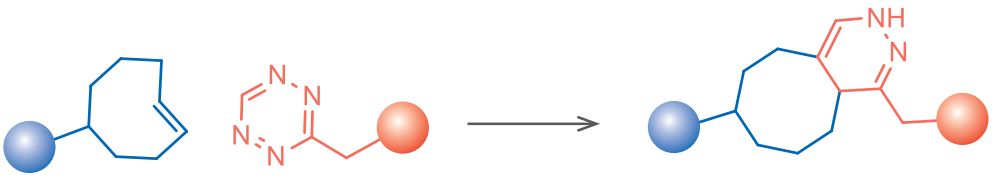
Cu–Catalyzed Click Chemistry (CuAAC)

- Reagents are easily accessible
- Wide variety of alkynes and azides are commercially available
- Fast reaction kinetics
- Alkyne–and azide–modified biopolymers are stable in aqueous media for months
- Toxic copper catalyst damages biological systems and affects the function of some proteins
- Reaction requires accessory reagents (e.g. chelating ligands and reducing agents)



Cu–Free Click Chemistry (SPAAC)

- Biocompatible reaction occurs under mild aqueous buffer conditions
- No catalyst or accessory reagents required
- Bioorthogonal pair (DBCO/Azide) exhibit long–term aqueous stability
- Wide variety of azides and cyclooctynes (e.g. DBCO) are commercially available
- Kinetics are fast enough for relatively high concentration applications (e.g., protein–small molecule conjugation, protein–peptide conjugation)



Inverse–Demand Diels Alder Reaction

- Extremely fast kinetics (> 800 $M^{-1}s^{-1}$) permits efficient protein–protein conjugation at < 1 mg/mL in 60 minutes or less
- Biocompatible reaction occurs under mild aqueous buffer conditions at ambient temperature
- No toxic catalyst or accessory reagents required
- Tetrazine–and TCO–modified biopolymers remain reactive in aqueous storage (weeks at 4°C)
- Tetrazines and TCOs are not readily accessible but commercially available.

TCO–Tetrazine Ligation

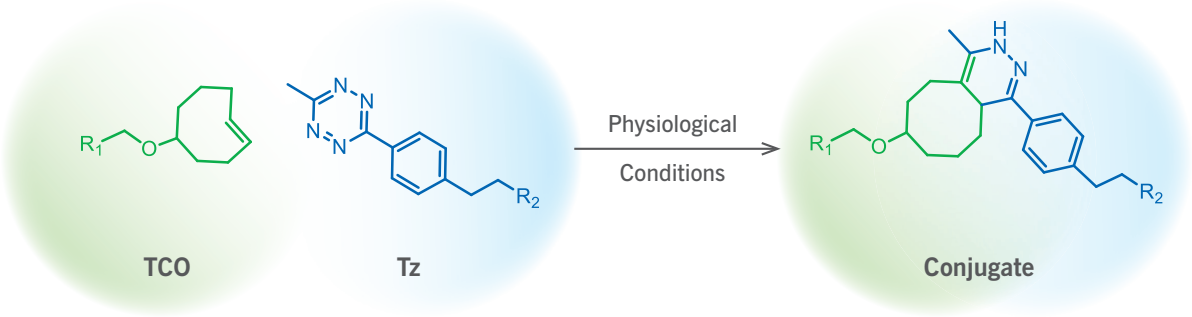


Figure 4. Schematic representation of a TCO–Tz ligation reaction.

At low biomolecule concentrations (e.g. < 5 μM) where SPAAC falls short due to modest kinetics (e.g. 0.3 to 2.3 $M^{-1}s^{-1}$), and where copper–catalyzed alkyne–azide cycloaddition click reaction might compromise system viability, *trans*–cyclooctene–tetrazine (TCO–Tz) is the reaction pair of choice. This ligation chemistry is based on an inverse–demand Diels–Alder cycloaddition reaction between a *trans*–cyclooctene and tetrazine reaction pair, forming a dihydropyridazine bond (**Figure 4**). The chemoselective TCO–Tz ligation pair possess ultrafast kinetics (> 800 $M^{-1}s^{-1}$) unmatched by any other bioorthogonal ligation pair.

Reactivity is clearly a prerequisite for applications performed under highly dilute conditions, for example, protein–protein conjugations. Protein–protein conjugations are often constrained to low protein concentrations (e.g. <1 mg/mL) due to limited availability of proteins and/or associated cost factors.

Reactivity can be defined by the second order rate constant for the bioorthogonal reactant pairs. The higher the 2nd order rate constant for product formation, the more efficient the conjugation at low reactant concentrations within reasonable time scales, at near neutral pH, and without having to use a large excess of either biomolecule. The relationship between2nd order rate constants ($M^{-1}s^{-1}$) for bioorthogonal reactants at 10 μM and the percent conjugate yield over time is illustrated in **Figure 5**.

The combination of ultrafast kinetics, selectivity, and long–term aqueous stability makes TCO–Tz the ideal pair in low concentration applications such as protein–protein conjugations.

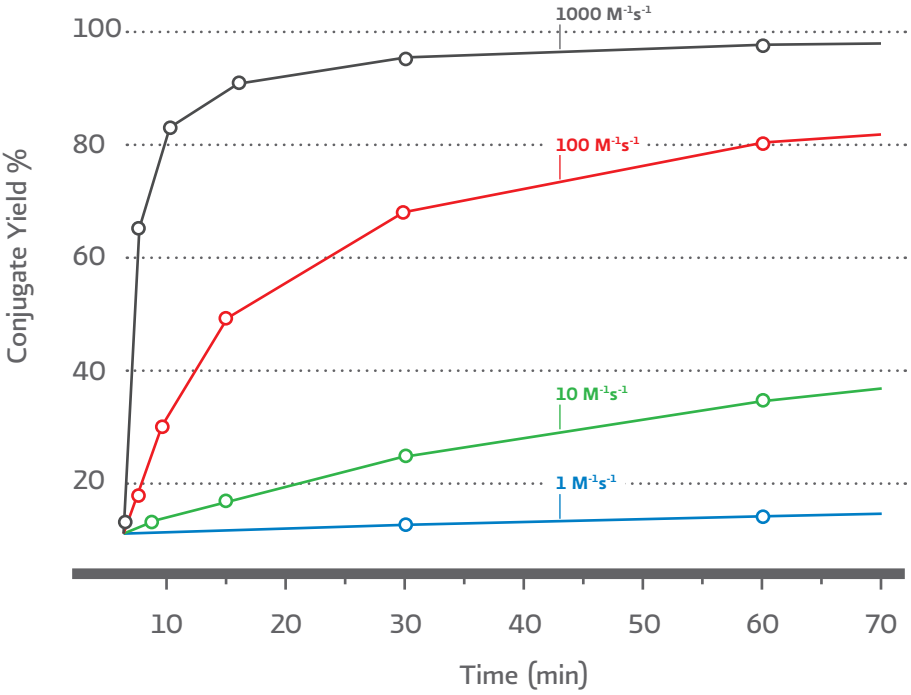


Figure 5. Simulation of 2nd order reactions at 10 μM reactants

Example Application

Five Goat IgG samples (100 μL at 5 mg/mL, 4 mg/mL, 3 mg/mL, 2 mg/mL and 1 mg/mL) were labeled in BupH buffer (pH 7.5) using a 20–fold molar excess of Tetrazine–PEG5–NHS ester. Similarly, 0.1 mL HRP (500 μg) at 5.0 mg/mL in BupH buffer (pH 7.5) was labeled using a 20–fold molar excess TCO–PEG4–NHS ester for 60 min. After removal of excess reagents and determining each protein concentration 3–fold excess of HRP–TCO was added to IgG–Tetrazine at 5 mg/mL, 4 mg/mL, 3 mg/mL, 2 mg/mL and 1 mg/mL. After 60 minutes, an aliquot (1 μL) from each conjugation reaction was analyzed by SDS–PAGE.

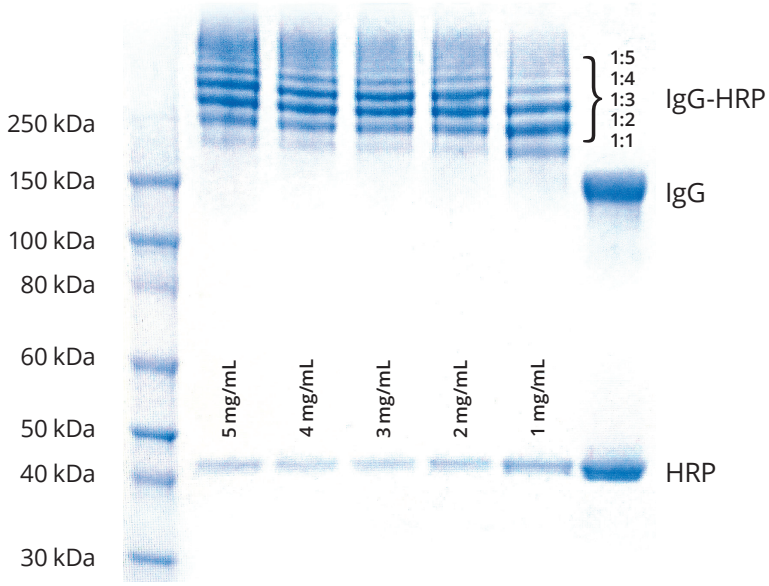
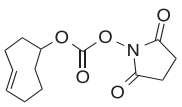


Figure 6. Typical results of IgG labeling at 1 to 5 mg/mL

TCO–NHS Ester

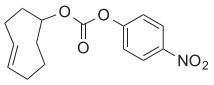
CAS:	119190–33–3
MW:	267.28
Solubility:	DMSO, DMF, DCM, THF, Chloroform
Description:	TCO-NHS Ester is not recommended for labeling of proteins in aqueous buffers due to poor level activation of labeled proteins (Rahim, M.K., *et al.,* Bioconjugate Chem. 2015, 26, 352-360).



Catalog#	Unit	Price
1016–25	25 mg	$145
1016–100	100 mg	$435
1016–1000	1000 mg	$1950

TCO–PNB Ester

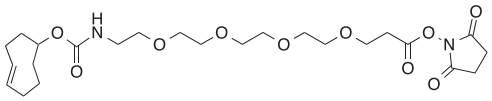
CAS:	1438415-89-4
MW:	291.30
Solubility:	DMSO, DMF, DCM, THF, Chloroform
Description:	Amine-reactive building block



Catalog#	Unit	Price
1192–25	25 mg	$145
1192–100	100 mg	$435
1192–1000	1000 mg	$1735

TCO–PEG4–NHS Ester

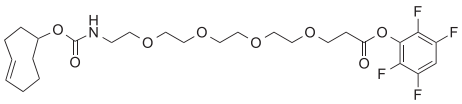
CAS:	1621096-79-4
MW:	514.57
Solubility:	DMSO, DMF, THF, DCM
Description:	Amine-reactive labeling reagent



Catalog#	Unit	Price
A137–1	4x2 mg	$149
A137–10	10 mg	$95
A137–25	25 mg	$195
A137–100	100 mg	$495

TCO–PEG4–TFP Ester

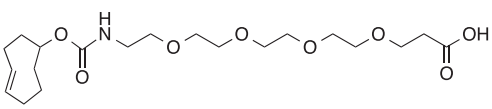
CAS:	n/a
MW:	565.56
Solubility:	DMSO, DMF, DCM, THF
Description:	Amine-reactive labeling reagent with improved labeling efficiency



Catalog#	Unit	Price
1398–1	4x2 mg	$149
1398–10	10 mg	$95
1398–25	25 mg	$195
1398–100	100 mg	$495

TCO–PEG4–Acid

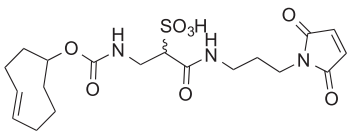
CAS:	n/a
MW:	417.49
Solubility:	DMSO, DMF, MeOH
Description:	Non-activated, amine reactive building block



Catalog#	Unit	Price
1088–25	25 mg	$195
1088–100	100 mg	$550
1088–500	500 mg	$1895

Sulfo TCO–Maleimdie

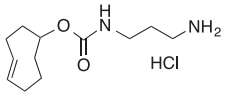
CAS: n/a
MW: 457.50
Solubility: DMSO, DMF, THF, Water
Description: Sulfhydryl -reactive labeling reagent with hydrophilic PEG_4 spacer arm



Catalog#	Unit	Price
1355–10	10 mg	$95
1355–25	25 mg	$195
1355–100	100 mg	$595

TCO–Amine, HCl salt

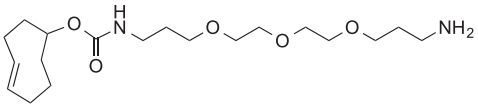
CAS: 1609659-02-0
MW: 262.78
Solubility: DMSO, DMF, THF, DCM
Description: Carboxyl reactive building block



Catalog#	Unit	Price
1021–25	25 mg	$195
1021–100	100 mg	$495
1021–1000	1000 mg	$2995

TCO–PEG3–Amine

CAS: n/a
MW: 372.50
Solubility: DMSO, DMF, THF, DCM
Description: Carboxyl reactive building block



Catalog#	Unit	Price
1188–25	25 mg	$195
1188–100	100 mg	$495
1188–500	500 mg	$1695

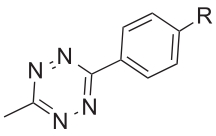
Fluorescent TCO Probes

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
AFDye 488 TCO	494/517	Green	1 mg	1356–1	$139.00
			5 mg	1356–5	$495.00
			25 mg	1356–25	$1295.00
AFDye 568 TCO	578/602	Red	1 mg	1358–1	$139.00
			5 mg	1358–5	$495.00
			25 mg	1358–25	$1295.00
Cy5 TCO	647/663	Near IR	1 mg	1089–1	$120.00
			5 mg	1089-5	$430.00
			25 mg	1089–25	$1190.00

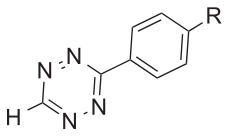
Tetrazine Selection Guide

The inverse electron demand cycloaddition reaction has recently emerged as powerful tool for exploring various aspects of biological systems. This reaction has gained popularity due to the potential for extremely fast cycloaddition kinetics with trans–cyclooctene (TCO) as the dienophile. Applications have included fluorescent labeling of cancer cells, *in vivo* cancer cell imaging with ^{111}In, ^{18}F radiolabeling, cancer detection applications, and bioconjugation.

Most commercially available tetrazines are either hydrogen or methyl substituted. Stability, kinetics, and solubility in aqueous media vary dramatically with slight changes in the nature of substituents. Therefore, it is increasingly important to be able to identify tetrazine candidates most ideally suited for a particular application.



Methyl substituted tetrazines



Hydrogen substituted tetrazines

Stability

In general, tetrazines with stronger electron withdrawing groups showed lower stability than hydrogen substituted tetrazines while the electron donating alkyl substituted tetrazines exhibited the highest stability. A recent study (Karver, M.K., et al, B*ioconjugate Chem.* **2011**, *22*, 2263–2270) showed that hydrogen substituted tetrazines rapidly decompose in FBS at 37 °C, with less than 50% of intact tetrazines remaining in solution only after 10 hours. At the same time, the electron donating alkyl substituted tetrazines exhibited very little decomposition. Our studies revealed that methyl substituted tetrazines tolerate a much wider range of reagents and chemical transformations. In addition, proteins labeled with methyl substituted tetrazine retained reactivity toward TCO compounds over a long period of time. On average, we observe about 10–20% loss of reactivity toward TCO compounds after 4 weeks at 4°C, while proteins labeled with hydrogen substituted tetrazines lost most (>80%) of their reactivity toward TCO under identical conditions.

Kinetics

Hydrogen substituted tetrazines demonstrate exceptionally fast kinetics (up to 30,000 M^{-1} s^{-1}), generally at least 10 fold faster compared to methyl substituted tetrazines. Even relatively slow methyl substituted tetrazines (k ~1000 $M^{-1}s^{-1}$) react with TCO compounds at a much faster rate than any other bioorthogonal reaction pairs described to date. Despite demonstrating relatively slow kinetics, methyl substituted tetrazines were shown to be suitable for bioorthogonal use based on pre–targeted cancer cell labeling studies using flow cytometry and fluorescence microscopy (Devaraj, N. K., et al *Bioconjugate Chem.* **2008** *19*, 2297–2299).

We also studied the utility of this ligation pair (methyl substituted tetrazine–TCO) for protein–protein conjugation under highly dilute conditions. We demonstrated that goat IgG at 50 μg/mL (0.333 μM) activated with methyl–tetrazine can be converted into IgG–HRP conjugate with only 5 fold excess of TCO–activated HRP in 90 min with no detectable amount of unconjugated IgG remaining.

Solubility

In addition to these trends in kinetics and stability, other factors such as aqueous solubility should be considered before selecting tetrazines for a given application. Usually, 3,6–diaryl tetrazines demonstrate lower aqueous solubility than those with methyl or hydrogen substituents. For example, 3,6–diphenyl tetrazine is not soluble to any measurable amount in 100% water. The incorporation of hydrophilic PEG spacers dramatically increases solubility in aqueous media and reduces the aggregation of labeled proteins upon prolonged storage.

Making the Right Choice

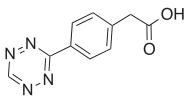
The choice of a particular tetrazine depends on the individual application, and a one–size–fits–all approach might not be favorable. A wide range of applications can be distinctively separated into two groups, applications where extremely fast kinetics is required, and applications where chemical stability is critical.

In applications such as protein–protein crosslinking, or antibody–drug conjugations (ADC), where extremely fast cycloaddition kinetics may not be as critical and exceptional chemical stability would be more beneficial, methyl substituted tetrazines have the advantage. This is due to the fact that methyl substituted tetrazines are able to withstand more harsh chemical environments and can endure long–term storage in solution.
On the other hand, in applications such as *in vivo* cancer imaging or for pre–targeted cell labeling studies where rapid reaction kinetics are desired, a faster hydrogen substituted tetrazine with acceptable chemical stability would be a logical choice.

Tetrazine Reagents

Tetrazine Acid

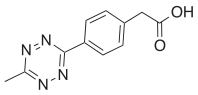
CAS: 1380500-92-4
MW: 216.20
Solubility: DMSO, DMF
Description: Amine–reactive building block



Catalog#	Unit	Price
1124–25	25 mg	$95
1124–100	100 mg	$295
1124–500	500 mg	$850
1124–1000	1000 mg	$1395

Methyltetrazine Acid

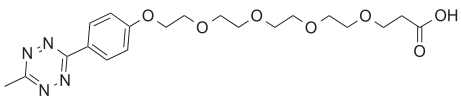
CAS: 1380500-88-8
MW: 230.22
Solubility: DMSO, DMF
Description: Amine–reactive building block



Catalog#	Unit	Price
1125–25	25 mg	$95
1125–100	100 mg	$195
1125–500	500 mg	$495
1125–1000	1000 mg	$850

Methyltetrazine–PEG4–Acid

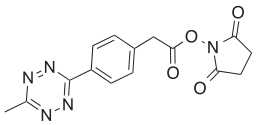
CAS: 1802907-91-0
MW: 436.56
Solubility: DMSO, DMF, THF, DCM
Description: Amine-reactive building block with hydrophilic spacer arm



Catalog#	Unit	Price
1073–25	25 mg	$95
1073–100	100 mg	$395
1073–500	500 mg	$895
1073–1000	1000 mg	$1495

Methyltetrazine–NHS Ester

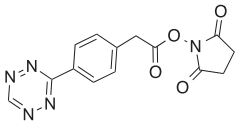
CAS: 1644644-96-1
MW: 327.29
Solubility: DMSO, DMF, DCM, THF
Description: Amine–reactive building block



Catalog#	Unit	Price
1128–25	25 mg	$95
1128–100	100 mg	$195
1128–500	500 mg	$549
1128–1000	1000 mg	$950

Tetrazine–NHS Ester

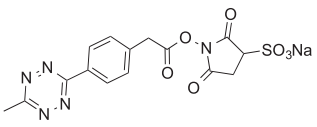
CAS: n/a
MW: 313.27
Solubility: DMSO, DMF, DCM, THF
Description: Amine–reactive building block



Catalog#	Unit	Price
1127–25	25 mg	$95
1127–100	100 mg	$295
1127–500	500 mg	$850
1127–1000	1000 mg	$1350

Methyltetrazine–*Sulfo*–NHS Ester

CAS: n/a
MW: 429.34
Solubility: Water, DMSO, DMF
Description: Water-soluble, amine reactive labeling reagent

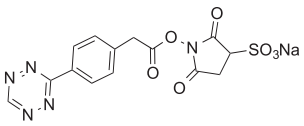


Catalog#	Unit	Price
1193–10	10 mg	$145
1193–25	25 mg	$245
1193–100	100 mg	$595

Tetrazine–*Sulfo*–NHS Ester

	Catalog#	Unit	Price
	1191–10	10 mg	$145
	1191–25	25 mg	$245
	1191–100	100 mg	$595

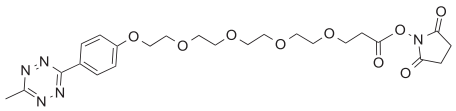
CAS: n/a
MW: 415.31
Solubility: Water, DMSO, DMF
Description: Water-soluble, amine reactive labeling reagent



Methyltetrazine–PEG4–NHS Ester

	Catalog#	Unit	Price
	1069–1	4x2 mg	$149
	1069–10	10 mg	$120
	1069–25	25 mg	$195
	1069–100	100 mg	$495

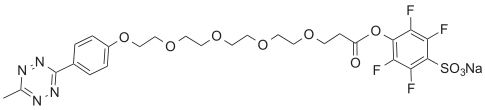
CAS: 1802907-92-1
MW: 533.53
Solubility: DMSO, DMF, DCM, THF
Description: Amine–reactive labeling reagent



Methyltetrazine–PEG4–STP Ester

	Catalog#	Unit	Price
	1399–1	4x2 mg	$149
	1399–10	10 mg	$120
	1399–25	25 mg	$245
	1399–100	100 mg	$595

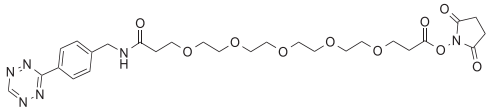
CAS: n/a
MW: 686.56
Solubility: Water, DMSO, DMF
Description: Water–soluble, amine-reactive labeling reagents with improved labeling efficiency



Tetrazine–PEG5–NHS Ester

	Catalog#	Unit	Price
	1143–1	4x2 mg	$149
	1143–10	10 mg	$120
	1143–25	25 mg	$195
	1143–100	100 mg	$595

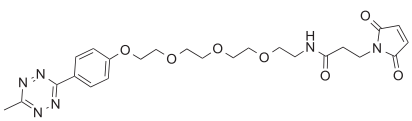
CAS: 1682653-80-0
MW: 604.61
Solubility: DMSO, DMF, THF, DCM
Description: Amine-reactive labeling reagents with exceptional kinetics



Methyltetrazine–PEG4–Maleimide

	Catalog#	Unit	Price
	1068–10	10 mg	$120
	1068–25	25 mg	$195
	1068–100	100 mg	$495

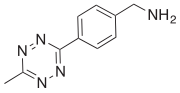
CAS: n/a
MW: 514.53
Solubility: DMSO, DMF, DCM, THF
Description: Maleimide–activated labeling reagent with extended PEG_4 spacer arm



Tetrazine Reagents

Methyltetrazine Amine, HCl salt

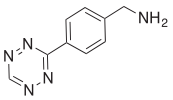
CAS:	1092689-33-2
MW:	187.09
Solubility:	DMSO, DMF, water
Description:	Carboxyl–reactive building block



Catalog#	Unit	Price
1011–25	25 mg	$95
1011–100	100 mg	$295
1011–500	500 mg	$950
1011–1000	1000 mg	$1495

Tetrazine Amine, HCl salt

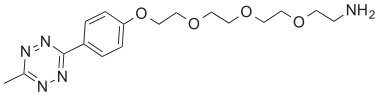
CAS:	1092689-33-2
MW:	187.09
Solubility:	DMSO, DMF, water
Description:	Carboxyl–reactive building block



Catalog#	Unit	Price
1130–25	25 mg	$95
1130–100	100 mg	$295
1130–500	500 mg	$950
1130–1000	1000 mg	$1495

Methyltetrazine–PEG4–Amine, HCl salt

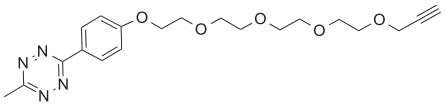
CAS:	1802908-05-9
MW:	363.19
Solubility:	DMSO, DMF, DCM, THF, water
Description:	Carboxyl–reactive building block with with extended PEG_4 spacer arm



Catalog#	Unit	Price
1012–25	25 mg	$95
1012–100	100 mg	$295
1012–500	500 mg	$950
1012–1000	1000 mg	$1495

Methyltetrazine–PEG4–Alkyne

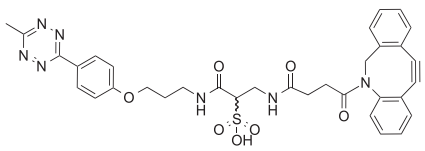
CAS:	n/a
MW:	402.44
Solubility:	DMSO, DMF, DCM, THF
Description:	Bifunctional crosslinker



Catalog#	Unit	Price
1013–10	10 mg	$95
1013–25	25 mg	$195
1013–100	100 mg	$495

Methyltetrazine DBCO

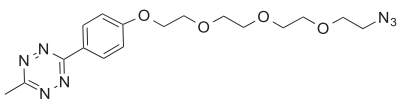
CAS:	n/a
MW:	683.73
Solubility:	Water, DMSO, DMF, MeOH
Description:	Bifunctional crosslinker



Catalog#	Unit	Price
1022–10	10 mg	$120
1022–25	25 mg	$245
1022–100	100 mg	$795

Methyltetrazine–PEG4–Azide

CAS:	n/a
MW:	389.40
Solubility:	DMSO, DMF, DCM, THF
Description:	Bifunctional crosslinker



Catalog#	Unit	Price
1014–10	10 mg	$95
1014–25	25 mg	$195
1014–100	100 mg	$495

Fluorescent Tetrazines

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
AFDye 488 Tetrazine	494/517	Green	1 mg	1361–1	$159.00
			5 mg	1361–5	$695.00
			25 mg	1361–25	$2150.00
AFDye 555 Tetrazine	555/570	Orange	1 mg	1357–1	$495.00
			5 mg	1357–5	$495.00
			25 mg	1357–25	$1695.00
AFDye 568 Tetrazine	578/602	Red	1 mg	1358–1	$139.00
			5 mg	1358–5	$495.00
			25 mg	1358–25	$1295.00
AFDye 594 Tetrazine	590/617	Red	1 mg	1364–1	$159.00
			5 mg	1364–5	$495.00
			25 mg	1364–25	$1650.00
Cy5 Tetrazine	649/670	Near IR	1 mg	1189–1	$159.00
			5 mg	1189–5	$495.00
			25 mg	1189–25	$1650.00
Cy7 Methyltetrazine	753/775	Near IR	1 mg	1027–1	$115.00
			5 mg	1027-5	$395.00
			25 mg	1027–25	$1195.00

Visit Click Chemistry Tools for a full list of fluorescent tetrazines/methyltetrazine probes

Cu–Free Click Chemistry (SPAAC)

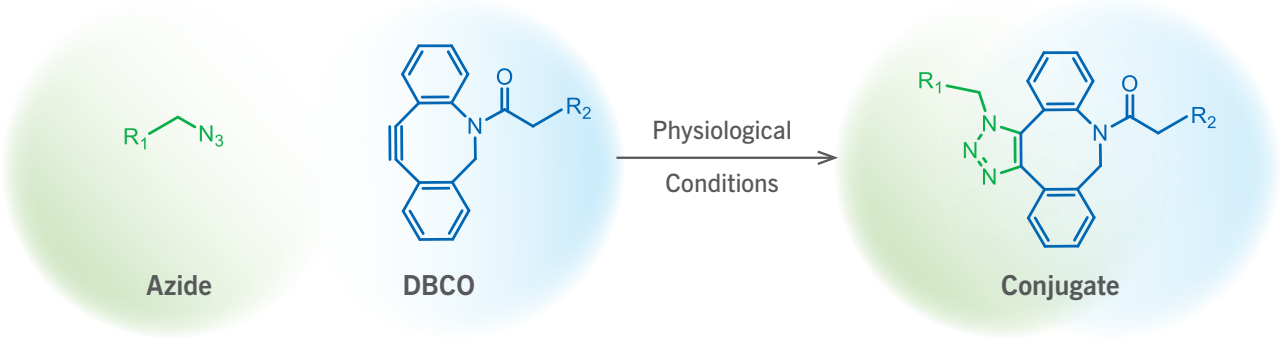


Figure 7. Schematic representation of a SPAAC ligation reaction.

The strain-promoted alkyne-azide cycloaddition, also termed as the Cu-free click reaction, is a bioorthogonal reaction utilizing a pair of reagents, cyclooctynes and azides that exclusively and efficiently react with each other while remain inert to naturally occurring functional groups such as amines (**Figure 7**). SPAAC enables labeling a wide variety of biomolecules without any auxiliary reagents in an aqueous and otherwise complex chemical environment through the formation of a stable triazole.

Among the large number of known cyclooctynes, the so-called DBCO (dibenzocyclooctynes) compounds comprise a class of reagents that possesses reasonably fast kinetics and good stability in aqueous buffers. Within physiological temperature and pH ranges, the DBCO group will not react with amines or hydroxyls that are naturally present in many biomolecules. Additionally, reaction of the DBCO group with the azide group is significantly faster than with sulfhydryl groups (–SH, thiol).

Unlike many other cyclooctynes, DBCO reagents possess an embedded chromophore that allows for the simple and non–destructive spectroscopic identification of DBCO–containing compounds. This chromophore can also be used for spectroscopic estimation of total incorporated DBCO molecules into a biopolymer.

Another important feature of DBCO compounds is that the progress of SPAAC ligation can be followed in real time by simple UV–Vis spectroscopy. As the "click reaction" progresses the signature an absorbance band at 310 nm disappears as illustrated **Figure 8**.

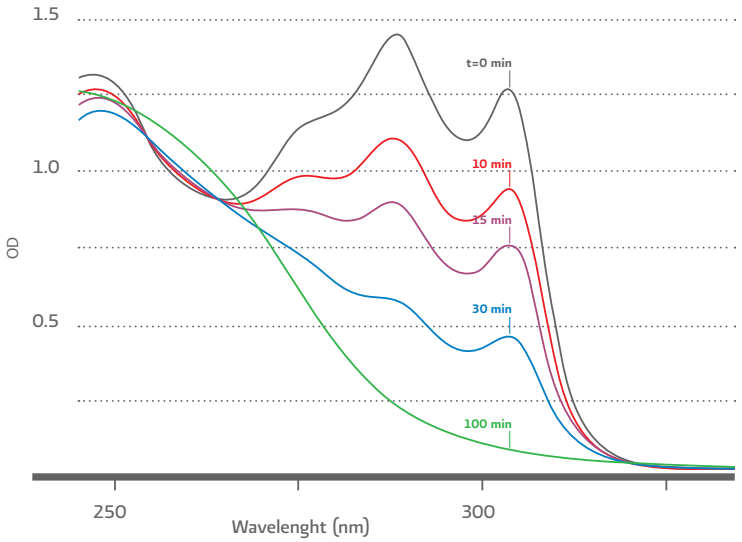
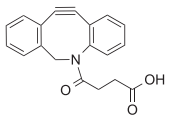


Figure 8. Progress of SPAAC ligation reaction followed by UV–Vis spectroscopy.

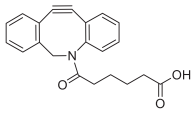
DBCO Acid

		Catalog#	Unit	Price
CAS:	1353016-70-2	1117–100	100 mg	$245
MW:	305.11	1117–1000	1000 mg	$1350
Solubility:	DMSO, DMF	1117–5G	5 g	$3750
Description:	Non-activated amine-reactive building block			



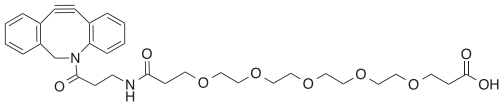
DBCO–C6–Acid

		Catalog#	Unit	Price
CAS:	1425485-72-8	A101–100	100 mg	$195
MW:	333.83	A101–1000	1000 mg	$1150
Solubility:	DMSO, DMF, DCM, THF	A101–5G	5 g	$3750
Description:	Building block with improved stability and solubility			



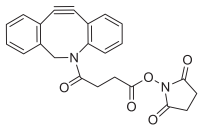
DBCO–PEG5–Acid

		Catalog#	Unit	Price
CAS:	n/a	A101P–25	25 mg	$175
MW:	596.67	A101P–100	100 mg	$395
Solubility:	DMSO, DMF, DCM, THF	A101P–500	500 mg	$1195
Description:	Building block with improved stability and solubility			



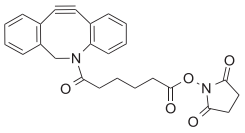
DBCO–NHS Ester

		Catalog#	Unit	Price
CAS:	1353016-71-3	A133–25	25 mg	$115
MW:	402.40	A133–100	100 mg	$245
Solubility:	DMSO, DMF, DCM, THF	A133–1000	1000 mg	$1350
Description:	Amine-reactive building block	A133–5G	5 g	$4750



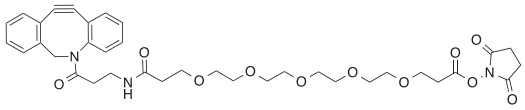
DBCO–C6–NHS Ester

		Catalog#	Unit	Price
CAS:	1384870-47-6	A102–100	100 mg	$245
MW:	430.45	A102–1000	1000 mg	$1350
Solubility:	DMSO, DMF, DCM, THF	A102–5G	5 g	$3750
Description:	Amine-reactive building block with improved stability			



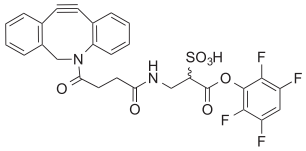
DBCO–PEG5–NHS Ester

		Catalog#	Unit	Price
CAS:	1378531-80-6	A102P–1	4x2 mg	$129
MW:	693.74	A102P–10	10 mg	$95
Solubility:	DMSO, DMF, DCM, THF	A102P–25	25 mg	$179
Description:	Labeling reagent with improved stability and solubility	A102P–100	100 mg	$395
		A102P–500	500 mg	$1295



Sulfo DBCO–TFP Ester

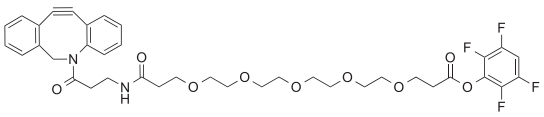
		Catalog#	Unit	Price
CAS:	n/a	1400–10	10 mg	$115
MW:	604.53	1400–25	25 mg	$195
Solubility:	DMSO, DMF, DCM, THF	1400–100	100 mg	$495
Description:	Water-soluble labeling reagent	1400–500	500 mg	$1795



DBCO Reagents

DBCO–PEG5–TFP Ester

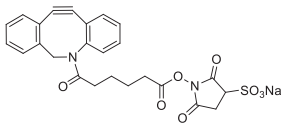
CAS:	n/a
MW:	744.27
Solubility:	DMSO, DMF, DCM, THF
Description:	Labeling reagent with improved with improved labeling efficiency



Catalog#	Unit	Price
1260–2	4x2 mg	$129
1260–10	10 mg	$95
1260–25	25 mg	$179
1260–100	100 mg	$395
1260–500	500 mg	$1295

DBCO–*Sulfo*–NHS Ester

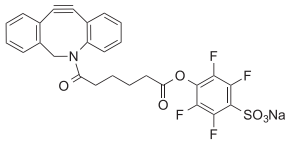
CAS:	1400191-52-7
MW:	532.50
Solubility:	Water, DMSO, DMF
Description:	Water-soluble labeling reagent



Catalog#	Unit	Price
A124–10	10 mg	$95
A124–25	25 mg	$195
A124–100	100 mg	$495
A124–500	500 mg	$1695

DBCO–STP Ester

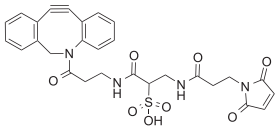
CAS:	n/a
MW:	583.49
Solubility:	Water, DMSO, DMF
Description:	Water-soluble labeling reagent with improved labeling efficiency



Catalog#	Unit	Price
1259–10	10 mg	$95
1259–25	25 mg	$195
1259–100	100 mg	$495
1259–500	500 mg	$1695

Sulfo DBCO–Maleimide

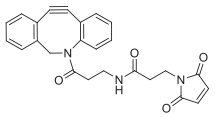
CAS:	n/a
MW:	578.59
Solubility:	Water, DMSO, DMF, DCM, THF
Description:	Water-soluble, sulfhydryl -reactive labeling reagent



Catalog#	Unit	Price
1230–10	10 mg	$95
1230–25	25 mg	$195
1230–100	100 mg	$495
1230–500	500 mg	$1695

DBCO Maleimide

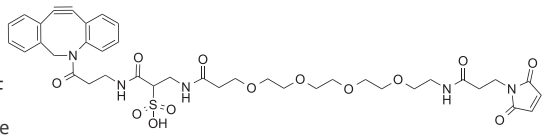
CAS:	1395786-30-7
MW:	427.75
Solubility:	DMSO, DMF, DCM, THF
Description:	Sulfhydryl -reactive labeling reagent



Catalog#	Unit	Price
A108–25	25 mg	$115
A108–100	100 mg	$295
A108–1000	1000 mg	$1695

Sulfo DBCO–PEG4–Maleimide

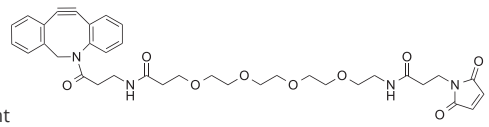
CAS:	n/a
MW:	825.89
Solubility:	Water, DMSO, DMF, DCM, THF
Description:	Water-soluble, sulfhydryl -reactive labeling reagent with hydrophilic PEG_4 spacer arm



Catalog#	Unit	Price
1231–10	10 mg	$95
1231–25	25 mg	$195
1231–100	100 mg	$545
1231–500	500 mg	$1795

DBCO–PEG4–Maleimide

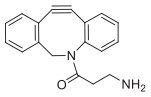
CAS:	1480516-75-3
MW:	674.74
Solubility:	DMSO, DMF, DCM, THF
Description:	Sulfhydryl -reactive labeling reagent with hydrophilic PEG_4 spacer arm



Catalog#	Unit	Price
A108P–10	10 mg	$95
A108P–25	25 mg	$195
A108P–100	100 mg	$495
A108P–500	500 mg	$1695

DBCO Amine

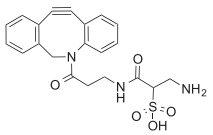
CAS:	1255942-06-3
MW:	276.33
Solubility:	DMSO, DMF, DCM, THF
Description:	Carboxyl reactive building block



Catalog#	Unit	Price
A103–25	25 mg	$115
A103–100	100 mg	$225
A103–1000	1000 mg	$1050
A103–5G	5 g	$3750

Sulfo DBCO–Amine

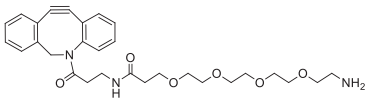
CAS:	n/a
MW:	427.47
Solubility:	Water, DMSO, DMF
Description:	Water-soluble, carboxyl reactive building block



Catalog#	Unit	Price
1227–10	10 mg	$95
1227–25	25 mg	$195
1227–100	100 mg	$395
1227–1000	1000 mg	$1695

DBCO–PEG4–Amine

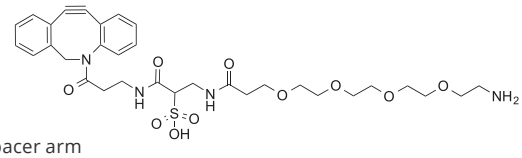
CAS:	1255942-08-6
MW:	523.62
Solubility:	DMSO, DMF, DCM, THF
Description:	Carboxyl reactive building block with hydrophilic spacer arm



Catalog#	Unit	Price
A103P–25	25 mg	$195
A103P–100	100 mg	$495
A103P–500	500 mg	$1695

Sulfo DBCO–PEG4–Amine

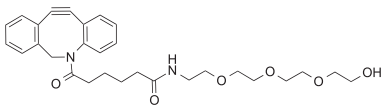
CAS:	n/a
MW:	674.26
Solubility:	Water, DMSO, DMF
Description:	Water-soluble, carboxyl reactive building block with hydrophilic spacer arm



Catalog#	Unit	Price
1228–25	25 mg	$195
1228–100	100 mg	$495
1228–500	500 mg	$1695

DBCO–PEG4–Hydroxyl

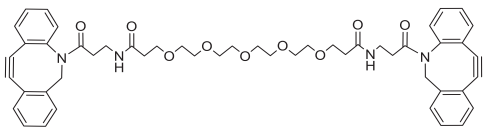
CAS:	1416711-60-8
MW:	508.61
Solubility:	DMSO, DMF, THF, DCM
Description:	Bifunctional crosslinker



Catalog#	Unit	Price
A104–25	25 mg	$95
A104–100	100 mg	$295
A104–500	500 mg	$1695

DBCO–PEG4–DBCO

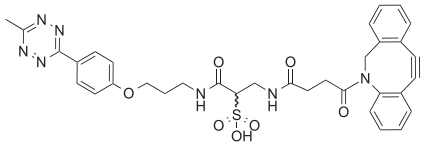
CAS:	n/a
MW:	854.92
Solubility:	DMSO, DMF, DCM, THF
Description:	Bifunctional crosslinker



Catalog#	Unit	Price
A128–25	25 mg	$95
A128–100	100 mg	$245
A128–1000	1000 mg	$1295

Methyltetrazine DBCO

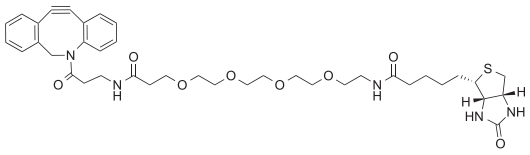
		Catalog#	Unit	Price
CAS:	n/a	1022–10	10 mg	$120
MW:	683.73	1022–25	25 mg	$245
Solubility:	Water, DMSO, DMF, MeOH	1022–100	1000 mg	$795
Description:	Bifunctional crosslinker			



Biotin Probes for Cu-free Click Chemistry

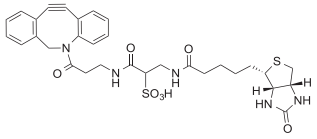
DBCO–PEG4–Biotin

		Catalog#	Unit	Price
CAS:	1255942-07-4	A105–10	10 mg	$149
MW:	749.92	A105–25	25 mg	$279
Solubility:	DMSO, DMF, THF, MeOH	A105–100	100 mg	$895
Description:	Biotinylation reagent			



WS DBCO–Biotin

		Catalog#	Unit	Price
CAS:	1363444-70-5	A116–10	10 mg	$179
MW:	653.77	A116–25	25 mg	$329
Solubility:	DMSO, DMF, THF, DCM	A116–100	100 mg	$1095
Description:	Water-solble biotinylation reagent			



Cleavable Biotin Probes for Cu-free Click Chemistry

Please see pages **40-43** for a list of cleavable biotinylation reagents.

DBCO–mPEG

Description	Pkg. Size	Product #	Price
DBCO–mPEG 5 kDa	25 mg	A118–25	$95.00
	100 mg	A118–100	$195.00
	1000 mg	A118–1000	$995.00
DBCO–mPEG 10 kDa	25 mg	A119–25	$95.00
	100 mg	A119–100	$195.00
	1000 mg	A119–1000	$995.00
DBCO–mPEG 20 kDa	25 mg	A120–25	$95.00
	100 mg	A120–100	$195.00
	1000 mg	A120–1000	$995.00
DBCO–mPEG 30 kDa	25 mg	A121–25	$95.00
	100 mg	A121–100	$195.00
	1000 mg	A121–1000	$995.00

Discrete PEGylation reagents are available through custom synthesis.

Fluoresent Probes for Copper-free Click Chemistry

Click Chemistry Tools offers the largest selection of fluorescent probes for copper-less azide imaging. Our section of fluorescent probes includes AFDyes, Cy Dyes and classic dyes conjugated to DBCO alkynes. The photophysical properties of our AFDyes are exact match to Alexa Fluor® Dyes. Now researchers don't have to choose between outstanding performance of Alexa Fluor® Dyes and reasonable price, Click Chemistry Tools' AFDyes offer the best of both worlds.

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
AFDye 405 DBCO	402/424	Blue	1 mg	1310–1	$139.00
			5 mg	1310–5	$395.00
			25 mg	1310–25	$1295.00
AFDye 430 DBCO	430/537	Green	1 mg	1274–1	$129.00
			5 mg	1274–5	$395.00
			25 mg	1274–25	$1295.00
AFDye 488 DBCO	494/517	Green	1 mg	1278–1	$139.00
			5 mg	1278–5	$445.00
			25 mg	1278–25	$1395.00
AFDye 532 DBCO	532/554	Orange	1 mg	1282–1	$139.00
			5 mg	1282–5	$445.00
			25 mg	1282–25	$1395.00
AFDye 546 DBCO	554/570	Orange	1 mg	1286–1	$139.00
			5 mg	1286–5	$445.00
			25 mg	1286–25	$1395.00
AFDye 555 DBCO	555/572	Red	1 mg	1290–1	$139.00
			5 mg	1290–5	$435.00
			25 mg	1290–25	$1395.00
AFDye 568 DBCO	578/602	Red	1 mg	1294–1	$129.00
			5 mg	1294–5	$445.00
			25 mg	1294–25	$1395.00
AFDye 594 DBCO	590/617	Red	1 mg	1298–1	$139.00
			5 mg	1298–5	$445.00
			25 mg	1298–25	$1495.00
AFDye 647 DBCO	648/671	Near IR	1 mg	1302–1	$139.00
			5 mg	1302–5	$465.00
			25 mg	1302–25	$1495.00

DBCO – Fluorescent Dyes

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
DBCO Carboxyrhodamine 110	501/525	Green	1 mg	A127–1	$115.00
			5 mg	A127–5	$395.00
			25 mg	A127–25	$1095.00
DBCO TAMRA	548/562	Orange	1 mg	A131–1	$115.00
			5 mg	A131–5	$395.00
			25 mg	A131–25	$1195.00
			100 mg	A131–25	$2850.00
DBCO Cy3	553/569	Red	1 mg	A140–1	$115.00
			5 mg	A140–5	$395.00
			25 mg	A140–25	$1095.00
DBCO Cy5	649/671	Near IR	1 mg	A130–1	$115.00
			5 mg	A130–5	$395.00
			25 mg	A130–25	$1095.00
DBCO Cy5.5	678/694	Near IR	1 mg	1046–1	$105.00
			5 mg	1046–5	$395.00
			25 mg	1046–25	$1195.00
DBCO Cy7	753/775	Near IR	1 mg	1047–1	$115.00
			5 mg	1047-5	$395.00
			25 mg	1047–25	$1095.00

DBCO Activated MB™ Dyes

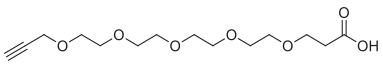
Water-soluble, photostabe fluorescent probes.

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
MB™ 488 DBCO	501/524	Green	1 mg	1190–1	$149.00
			5 mg	1190–5	$435.00
			25 mg	1190–25	$1395.00
MB™ 543 DBCO	543/563	Orange	1 mg	1174–1	$149.00
			5 mg	1174–5	$395.00
			25 mg	1174–25	$1295.00
MB™ 594 DBCO	601/623	Red	1 mg	1184–1	$149.00
			5 mg	1184–5	$455.00
			25 mg	1184–25	$1395.00

Labeling Reagents and Building Blocks

Alkyne–PEG4–Acid

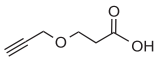
CAS: 1245823-51-1
MW: 304.34
Solubility: DMSO, DMF, THF, DCM



Catalog#	Unit	Price
TA102–100	100 mg	$195
TA102–1000	1000 mg	$795

Propargyl Acid

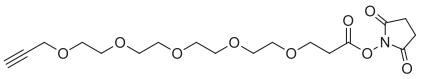
CAS: n/a
MW: 128.13
Solubility: DMSO, DMF, THF, DCM



Catalog#	Unit	Price
1080–1G	1 g	$95
1080–5G	5 g	$495

Alkyne–PEG4–NHS Ester

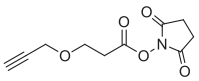
CAS: 1393330-40-9
MW: 401.41
Solubility: DMSO, DMF, THF, DCM



Catalog#	Unit	Price
TA103–25	25 mg	$95
TA103–100	100 mg	$195
TA103–1000	1000 mg	$795

Propargyl–NHS Ester

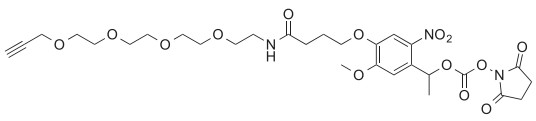
CAS: 1174157-65-3
MW: 225.20
Solubility: DMSO, DMF, THF, DCM



Catalog#	Unit	Price
TA111–100	100 mg	$95
TA111–1000	1000 mg	$495

PC Alkyne–NHS Ester

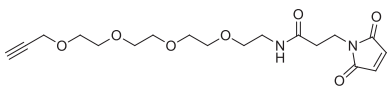
CAS: n/a
MW: 653.63
Solubility: Water, DMSO, DMF, MeOH
Description: Photocleavable labeling reagent



Catalog#	Unit	Price
1162–10	10 mg	$95
1162–25	25 mg	$195
1162–100	100 mg	$495

Alkyne–PEG4–Maleimide

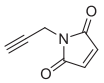
CAS: 1609651-90-2
MW: 382.41
Solubility: DMSO, DMF, THF, DCM



Catalog#	Unit	Price
TA104–25	25 mg	$95
TA104–100	100 mg	$195
TA104–1000	1000 mg	$695

N–Propargylmaleimide

CAS: 209395-32-4
MW: 130.12
Solubility: DMSO, DMF, THF, DCM

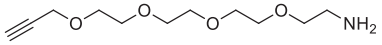


Catalog#	Unit	Price
TA113–25	25 mg	$45
TA113–100	100 mg	$139
TA113–1000	1000 mg	$495

Terminal Alkynes

Alkyne–PEG4–Amine

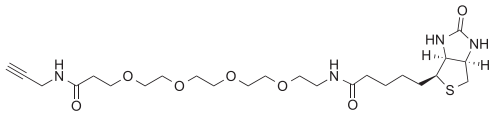
		Catalog#	Unit	Price
CAS:	1013921-36-2	TA101–100	100 mg	$195
MW:	231.29	TA101–1000	1000 mg	$695
Solubility:	DMSO, DMF, THF, DCM			



Biotinylation Reagents

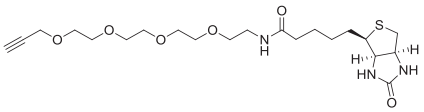
Biotin Alkyne

		Catalog#	Unit	Price
CAS:	n/a	1266–5	5 mg	$79
MW:	528.26	1266–25	25 mg	$329
Solubility:	DMSO, DMF	1266–100	100 mg	$1095
Description:	Exact replacement of Invitrogen's Biotin Alkyne (PEG4 carboxamide-Propargyl Biotin), Catalog number: B10185			



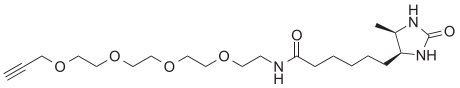
Biotin–PEG4–Alkyne

		Catalog#	Unit	Price
CAS:	1262681-31-1	TA105–25	25 mg	$125
MW:	457.58	TA105–100	100 mg	$235
Solubility:	DMSO, DMF, MeOH	TA105–1000	1000 mg	$1195
Description:	Biotinylation reagent			



Desthiobiotin–PEG4–Alkyne

		Catalog#	Unit	Price
CAS:	1951424-89-7	1109–5	5 mg	$79
MW:	427.23	1109–25	25 mg	$329
Solubility:	DMSO, DMF	1109–100	100 mg	$1095
Description:	Biotinylation reagent			



Cleavable Biotin Probes

Please see pages **40-43** for a list of cleavable biotinylation reagents.

Trifunctional TAMRA-Biotin-Alkyne Probe

Please see pages **38-39** for a list of cleavable biotinylation reagents.

Fluorescent Alkynes

Click Chemistry Tools offers the largest selection of fluorescent terminal alkynes for imaging azide-modified biomolecules. Our section of fluorescent probes includes AFDyes, Cy Dyes and classic dyes conjugated to terminal alkynes. The photophysical properties of our AFDyes are exact match to Alexa Fluor® Dyes. Now researchers don't have to choose between outstanding performance of Alexa Fluor® Dyes and reasonable price, Click Chemistry Tools' AFDyes offer the best of both worlds.

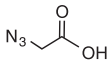
Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
AFDye 350 Alkyne	346/445	Blue	1 mg	1269–1	$129.00
			5 mg	1269–5	$395.00
			25 mg	1269–25	$1295.00
AFDye 405 Alkyne	402/424	Green	1 mg	1309–1	$129.00
			5 mg	1309–5	$395.00
			25 mg	1309–25	$1195.00
AFDye 488 Alkyne	494/517	Green	1 mg	1277–1	$139.00
			5 mg	1277–5	$445.00
			25 mg	1277–25	$1395.00
AFDye 532 Alkyne	532/554	Orange	1 mg	1281–1	$129.00
			5 mg	1281–5	$395.00
			25 mg	1281–25	$1195.00
AFDye 546 Alkyne	554/570	Orange	1 mg	1285–1	$129.00
			5 mg	1285–5	$395.00
			25 mg	1285–25	$1295.00
AFDye 555 Alkyne	554/569	Red	1 mg	1289–1	$129.00
			5 mg	1289–5	$395.00
			25 mg	1289–25	$1295.00
AFDye 568 Alkyne	578/602	Red	1 mg	1293–1	$129.00
			5 mg	1293–5	$395.00
			25 mg	1293–25	$1295.00
AFDye 594 Alkyne	590/617	Red	1 mg	1297–1	$129.00
			5 mg	1297–5	$395.00
			25 mg	1297–25	$1295.00
AFDye 647 Alkyne	648/671	Near IR	1 mg	1301–1	$139.00
			5 mg	1301–5	$435.00
			25 mg	1301–25	$1395.00

Visit www.clickchemistrytools.com for a full list of fluorescent terminal alkynes

Labeling Reagents and Building Blocks

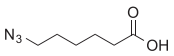
Azidoacetic Acid

		Catalog#	Unit	Price
CAS:	18523-48-3	1081–1g	1 g	$55
MW:	101.06	1081–5g	5 g	$149
Solubility:	DMSO, DMF, THF, DCM, water	1081–25g	25 g	$679



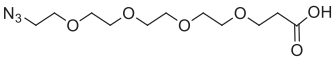
6–Azidohexanoic Acid

		Catalog#	Unit	Price
CAS:	79598-53-1	1250–1g	1 g	$129
MW:	157.17	1250–5g	5 g	$225
Solubility:	DMSO, DMF, DCM, THF, Chloroform	1250–25g	25 g	$835



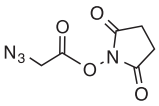
Azido–PEG4–Acid

		Catalog#	Unit	Price
CAS:	1257063-35-6	AZ102–100	100 mg	$179
MW:	291.30	AZ102–1000	1000 mg	$495
Solubility:	DMSO, DMF, THF, DCM	AZ102–5g	5 g	$1295



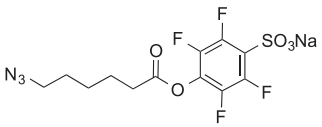
Azidoacetic Acid NHS Ester

		Catalog#	Unit	Price
CAS:	824426-32-6	1070–100	100 mg	$79
MW:	198.14	1070–1g	1 g	$279
Solubility:	DMSO, DMF, THF, DCM	1070–5g	5 g	$795



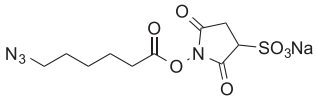
6–Azidohexanoic Acid STP Ester

		Catalog#	Unit	Price
CAS:	n/a	1401–5	5 mg	$95
MW:	407.27	1401–25	25 mg	$195
Solubility:	Water, DMSO, DMF	1401–100	100 mg	$495
		1401–500	500 mg	$1695



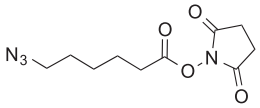
6–Azidohexanoic Acid *Sulfo*–NHS Ester

		Catalog#	Unit	Price
CAS:	n/a	1251–5	5 mg	$95
MW:	356.28	1251–25	25 mg	$195
Solubility:	Water, DMSO, DMF	1251–100	100 mg	$495
		1251–500	500 mg	$1695



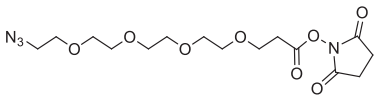
6–Azidohexanoic Acid NHS Ester

		Catalog#	Unit	Price
CAS:	n/a	1402–100	100 mg	$95
MW:	254.24	1402–1g	1 g	$295
Solubility:	DMSO, DMF, THF, DCM	1402–5g	5 g	$895



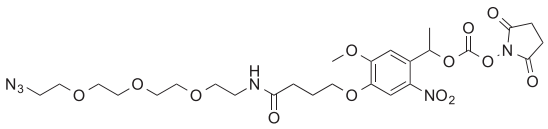
Azido–PEG4–NHS Ester

		Catalog#	Unit	Price
CAS:	944251-24-5	AZ103–25	25 mg	$79
MW:	388.37	AZ103–100	100 mg	$179
Solubility:	DMSO, DMF, THF, DCM	AZ103–1000	1000 mg	$495



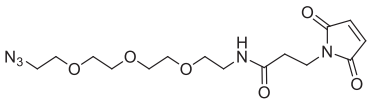
PC Azido NHS Ester

		Catalog#	Unit	Price
CAS:	n/a	1161–10	10 mg	$95
MW:	640.59	1161–25	25 mg	$195
Solubility:	DMSO, DMF, THF, DCM	1161–100	100 mg	$495



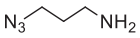
Azido–PEG3–Maleimide

		Catalog#	Unit	Price
CAS:	n/a	AZ107–25	25 mg	$95
MW:	369.37	AZ107–100	100 mg	$195
Solubility:	DMSO, DMF, DCM, THF	AZ107–1000	1000 mg	$1095
Description:	Sulfhydryl -reactive labeling reagent			



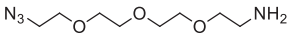
3-Azidopropylamine

		Catalog#	Unit	Price
CAS:	88192-19-2	AZ115–100	100 mg	$79
MW:	100.12	AZ115–1000	1000 mg	$279
Solubility:	DMSO, DMF, THF, DCM, water			



Azido–PEG3–Amine

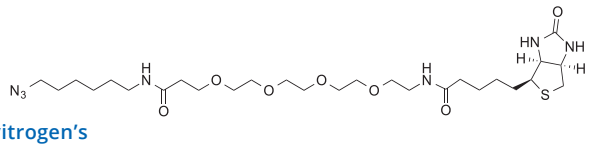
		Catalog#	Unit	Price
CAS:	134179-38-7	AZ101–100	100 mg	$79
MW:	218.25	AZ101–1000	1000 mg	$279
Solubility:	DMSO, DMF, THF, DCM			



Biotinylation Reagents

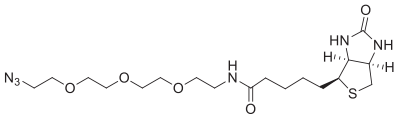
Biotin Azide

		Catalog#	Unit	Price
CAS:	n/a	1265–5	5 mg	$79
MW:	615.79	1265–25	25 mg	$329
Solubility:	DMSO, DMF, MeOH	1265–100	100 mg	$1095
Description:	Exact replacement of Invitrogen's Biotin Azide (PEG4 carboxamide-6-Azidohexanyl Biotin), Catalog number: B10184			



Biotin–PEG3–Azide

		Catalog#	Unit	Price
CAS:	875770-34-6	AZ104–25	25 mg	$79
MW:	444.55	AZ104–100	100 mg	$179
Solubility:	DMSO, DMF	AZ104–1000	1000 mg	$1079
Description:	Biotinylation reagent			



Fluorescent Azides

Click Chemistry Tools offers the largest selection of fluorescent azide probes for click chemistry. Our section of fluorescent probes includes AFDyes, Cy Dyes and classic dyes conjugated to azide groups. The photophysical properties of our AFDyes are exact match to Alexa Fluor® Dyes. Now researchers don't have to choose between outstanding performance of Alexa Fluor® Dyes and reasonable price, Click Chemistry Tools' AFDyes offer the best of both worlds.

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
AFDye 350 Azide	346/445	Blue	1 mg	1267–1	$129.00
			5 mg	1267–5	$395.00
			25 mg	1267–25	$1295.00
AFDye 405 Azide	402/424	Blue	1 mg	1307–1	$129.00
			5 mg	1307–5	$395.00
			25 mg	1307–25	$1295.00
AFDye 488 Azide	494/517	Green	1 mg	1275–1	$139.00
			5 mg	1275–5	$395.00
			25 mg	1275–25	$1295.00
AFDye 532 Azide	532/554	Orange	1 mg	1279–1	$139.00
			5 mg	1279–5	$395.00
			25 mg	1279–25	$1295.00
AFDye 546 Azide	554/570	Orange	1 mg	1283–1	$139.00
			5 mg	1283–5	$395.00
			25 mg	1283–25	$1295.00
AFDye 555 Azide	555/572	Red	1 mg	1287–1	$139.00
			5 mg	1287–5	$395.00
			25 mg	1287–25	$1395.00
AFDye 568 Azide	578/602	Red	1 mg	1291–1	$139.00
			5 mg	1291–5	$395.00
			25 mg	1291–25	$1395.00
AFDye 594 Azide	590/617	Red	1 mg	1295–1	$139.00
			5 mg	1295–5	$395.00
			25 mg	1295–25	$1295.00
AFDye 647 Azide	648/671	Near IR	1 mg	1299–1	$139.00
			5 mg	1299–5	$435.00
			25 mg	1299–25	$1395.00

Fluorescent Azides

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
OG 488 Azide Replacement of Invitrogen's Oregon Green® 488 Azide (Catalog number: O10180)	496/524	Green	1 mg	1264–1	$95.00
			5 mg	1264–5	$295.00
			25 mg	1264–25	$895.00
Carboxyrhodamine 110 Azide	501/523	Green	1 mg	AZ105–1	$95.00
			5 mg	AZ105–5	$179.00
			25 mg	AZ105–25	$479.00
TAMRA Azide	553/575	Orange	1 mg	AZ109–1	$95.00
			5 mg	AZ109–5	$179.00
			25 mg	AZ109–25	$479.00
5–TAMRA Azide Replacement of Invitrogen's Tetramethylrhodamine Azide (Catalog number: T10182).	553/575	Orange	1 mg	1245–1	$75.00
			5 mg	1245–5	$139.00
			5 mg	1245–25	$395.00
			25 mg	1245–100	$795.00
Cy3 Azide	553/569	Red	1 mg	AZ119–1	$95.00
			5 mg	AZ119–5	$295.00
			25 mg	AZ119–25	$690.00
Cy5 Azide	649/671	Near IR	1 mg	AZ118–1	$95.00
			5 mg	AZ118–5	$295.00
			25 mg	AZ118–25	$690.00
Cy5.5 Azide	678/694	Near IR	1 mg	1059–1	$105.00
			5 mg	1059–5	$295.00
			25 mg	1059–25	$690.00
Cy7 Azide	753/775	Near IR	1 mg	1052–1	$105.00
			5 mg	1052–5	$295.00
			25 mg	1052–25	$895.00

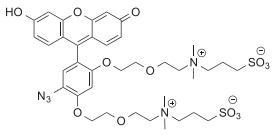
Visit www.clickchemistrytools.com to browse on a site selection of Fluorescent Azide probes

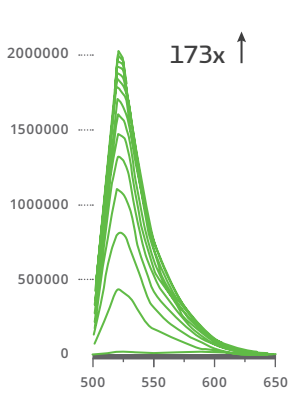
CalFluor Azide Probes

A major shortcoming of visualization of alkyne-tagged biomolecule with fluorescent azide probes through CuAAC is the need to remove unreacted fluorescent probes. This is particularly problematic when imaging the intracellular environment, tissues of living organisms, or visualizing biomolecules in vivo. Difficulty to remove all unreacted fluorescent probes is also one of major contributor to background signal and non-specific binding.

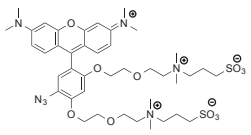
To overcome this shortcoming Carolyn Bertozzi group has designed fluorogenic azide probes that are activated by Cu-catalyzed or metal-free click chemistry. These azide probes are not fluorescent until they react with alkynes. Termed the CalFluors, these probes possess emission maxima that range from green to far-red wavelengths, and enable sensitive biomolecule detection under no-wash conditions. A number of reports showed that CalFluor probes are an indispensable tool for sensitive visualization of metabolically labeled molecules (glycans, DNA, RNA, and proteins) in cells, developing zebrafish, and mouse brain tissue slices under no-wash conditions.

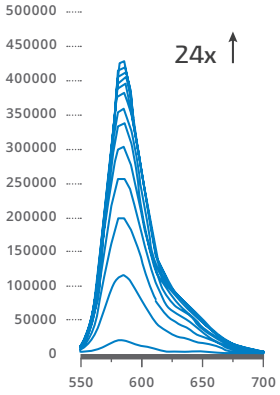
CalFluor 488 Azide



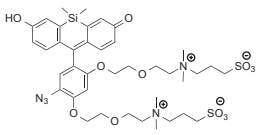


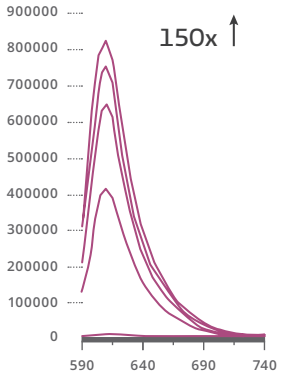
CalFluor 555 Azide



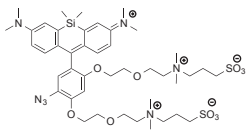


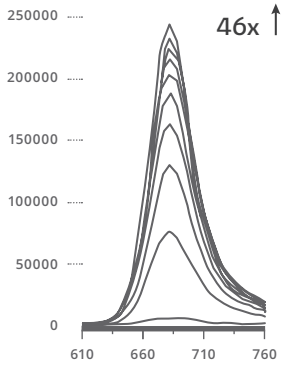
CalFluor 580 Azide





CalFluor 647 Azide





Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
CalFluor 488 Azide	500/521	Green	1 mg	1369 –1	$195.00
			5 mg	1369 –25	$795.00
CalFluor 555 Azide	561/583	Red	1 mg	1370 – 1	$195.00
			5 mg	1370 – 25	$795.00
CalFluor 580 Azide	591/609	Red	1 mg	1371 – 1	$195.00
			5 mg	1371 – 25	$795.00
CalFluor 647 Azide	657/674	Near IR	1 mg	1372 – 1	$195.00
			5 mg	1372 – 25	$795.00

Selected References:

Shieh P., *et al.* (2015). CalFluors: A Universal Motif for Fluorogenic Azide Probes across the Visible Spectrum*J. Am. Chem. Soc.*, **137**: 7145−51.

Pawlak, J. B., *et al.* (2016). The Optimization of Bioorthogonal Epitope Ligation within MHC-I Complexes. *ACS Chem. Biol.*, **11**: 3172−8.

Next Generation Azide Probes

Recent advances in design of copper chelating ligands such as THPTA or BTTAA improved kinetics of copper-catalyzed azide-alkyne cycloaddition reaction, or CuAAC and greatly increased sensitivity of alkyne detection. Dispute the recent improvements CuAAC is not without limitations. The reaction kinetics is still remains slow for detection of low abundance targets. In addition, to achieve sufficient labeling efficiency many protocols call for the use of relatively high concentrations of azide reagent (up to 50 μM), and copper (up to 2 mM), which might result in high background signal due to non-specific covalent labeling.

The next step in improving kinetics of CuAAC was introduction of copper chelating moiety into azide reporter to raise the effective Cu(I) concentration at reaction site (**Figure 10**)

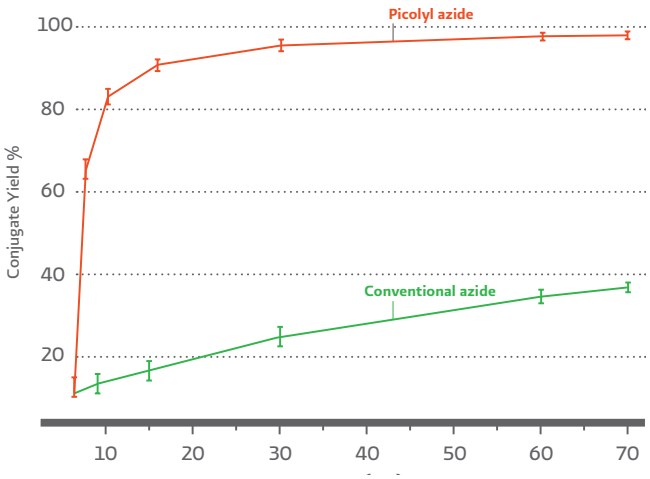


Figure 9. Kinetic comparison of chelating azide and non-chelating conventional azide

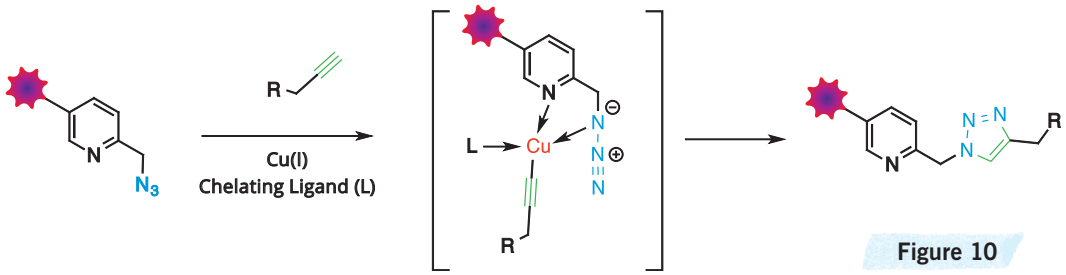


Figure 10

The rate of CuAAC reaction depends on concentrations of all reagents, including copper, thus the raise of the effective copper concentration at the reaction site dramatically increase the rate of CuAAC reaction without the need to increase concentration of azide reagent and copper.

The only practically useful azide bearing an internal copper-chelating motif that has been reported to date are electron-donating picolyl azides. The effect of internal copper-chelating motif on the kinetics of CuAAC, and consequently on sensitivity, is so great that it leads to several fold increase in signal intensity compared to conventional, non-chelating azides. This will be of special value for the detection of low abundance targets.

In addition to the gain in sensitivity, the use of picolyl-containing reporters allows for at least a tenfold reduction in the concentration of the copper catalyst without sacrificing sensitivity of alkyne detection.

Selected References:

1. Jiang, H., *et al.* (2014). Monitoring Dynamic Glycosylation in Vivo Using Supersensitive Click Chemistry. *Bioconjugate Chem.*, **25**: 698.

2. Uttamapinant, C., *et al.* (2012). Fast, Cell-Compatible Click Chemistry with Copper-Chelating Azides for Biomolecular Labeling. *Angew. Chem. Int. Ed,*. **51**: 5852.

3. A highly sensitive protocol for microscopy of alkyne lipids and fluorescently tagged or immunostained proteins. *J. Lipid. Res.*, **57**:1934.

Fluorescent Picolyl Azides

Click Chemistry Tools offers the largest selection of picolyl azide conjugated to fluorescent dyes. Our section of fluorescent probes includes AFDyes, Cy Dyes and classic dyes conjugated to azide groups. The photophysical properties of our AFDyes are exact match to Alexa Fluor® Dyes. The combination of exceptional reactivity of picolyl azide moiety with brightness AFDyes makes these probes of special value not only for detection of low abundance target but also for all other applications where increased S/N ratio is great value.

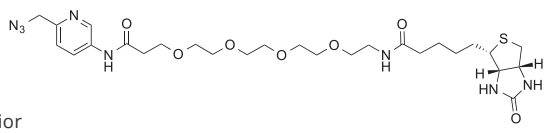
Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
AFDye 350 Picolyl Azide	346/445	Blue	1 mg	1268–1	$149.00
			5 mg	1268–5	$445.00
			25 mg	1268–25	$1395.00
AFDye 405 Picolyl Azide	402/424	Green	1 mg	1308–1	$149.00
			5 mg	1308–5	$445.00
			25 mg	1308–25	$1395.00
AFDye 488 Picolyl Azide	494/517	Green	1 mg	1276–1	$149.00
			5 mg	1276–5	$445.00
			25 mg	1276–25	$1395.00
AFDye 532 Picolyl Azide	532/554	Orange	1 mg	1280–1	$149.00
			5 mg	1280–5	$445.00
			25 mg	1280–25	$1395.00
AFDye 546 Picolyl Azide	554/570	Orange	1 mg	1284–1	$149.00
			5 mg	1284–5	$445.00
			25 mg	1284–25	$1395.00
AFDye 555 Picolyl Azide	555/572	Red	1 mg	1288–1	$149.00
			5 mg	1288–5	$445.00
			25 mg	1288–25	$1395.00
AFDye 568 Picolyl Azide	578/602	Red	1 mg	1292–1	$149.00
			5 mg	1292–5	$445.00
			25 mg	1292–25	$1395.00
AFDye 594 Picolyl Azide	590/617	Red	1 mg	1296–1	$149.00
			5 mg	1296–5	$435.00
			25 mg	1296–25	$1395.00
AFDye 647 Picolyl Azide	648/671	Near IR	1 mg	1300–1	$149.00
			5 mg	1300–5	$465.00
			25 mg	1300–25	$1495.00

Fluorescent Picolyl Azides

Description	Ex/Em	Emission Color	Pkg. Size	Product #	Price
Fluorescein Picolyl Azide (5/6-carboxyfluorescein)	490/510	Green	1 mg	1180–1	$139.00
			5 mg	1180–5	$295.00
			25 mg	1180–25	$1095.00
5-TAMRA Picolyl Azide	553/575	Orange	1 mg	1254–1	$149.00
			5 mg	1254–5	$395.00
			25 mg	1254–25	$1095.00
Cy3 Picolyl Azide	555/572	Red	1 mg	1178–1	$149.00
			5 mg	1178–5	$395.00
			25 mg	1178–25	$1195.00
Cy5 Picolyl Azide	647/663	Near IR	1 mg	1177–1	$149.00
			5 mg	1177–5	$395.00
			25 mg	1177–25	$1195.00
Cy5.5 Picolyl Azide	678/694	Near IR	1 mg	1182–1	$149.00
			5 mg	1182–5	$395.00
			25 mg	1182–25	$1295.00
Cy7 Picolyl Azide	753/775	Near IR	1 mg	1183–1	$149.00
			5 mg	1183-5	$395.00
			25 mg	1183–25	$1295.00

Biotin Picolyl Azide

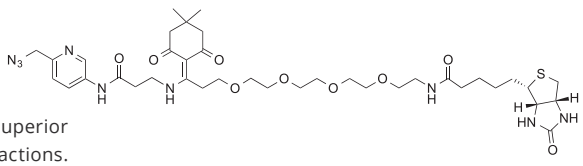
CAS: n/a
MW: 622.74
Solubility: DMSO, DMF
Description: Biotinylation reagent with superior in copper-catalyzed click reactions.



Catalog#	Unit	Price
1167–5	5 mg	$129
1167–25	25 mg	$295
1167–100	100 mg	$895

Dde Biotin Picolyl Azide

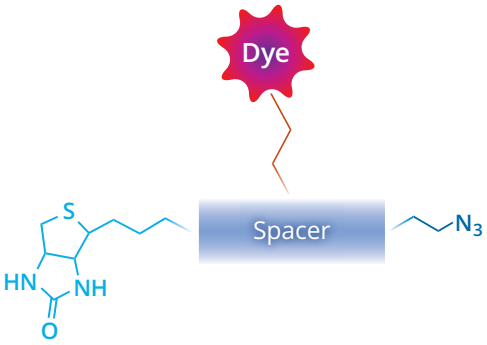
CAS: n/a
MW: 815.98
Solubility: DMSO, DMF, THF, DCM
Description: Biotinylation reagent with superior in copper-catalyzed click reactions.



Catalog#	Unit	Price
1186–5	5 mg	$129
1186–25	25 mg	$225
1186–100	100 mg	$1295

Trifunctional Click Chemistry Biotin Probes

Whilst biotin is a highly effective affinity label, fluorescent labels provide a more sensitive, quantitative, and convenient method for visualizing proteins. Trifunctional click chemistry probes that incorporate a ligation handle, a biotin and a fluorophore straightforwardly extended to combine the complementary benefits of both types of label. Dual-label TAMRA Biotin Azide probe can be readily incorporated into alkyne-tagged biomolecules through CuAAC ligation. For example, dual-labeled newly synthesized proteins, glycans, lipids, or DNA/RNA can be readily isolated by affinity purification and visualized by in-gel fluorescence.

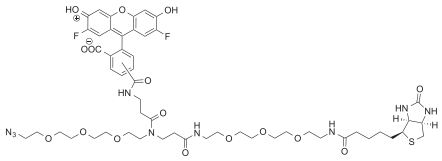


Another very important advantage of dual label probes over regular biotin probes is built-in control. Each step of enrichment process can easily followed either by UV-Vis (550 nm) or by more sensitive fluorescence spectroscopy. After elution form streptavidin beads target proteins containing TAMRA label can be easily distinguished from non-specifically bound proteins and endogenously biotinlytated proteins.

This new dual label probe should be useful to expand the new applications of standard biotin–streptavidin technology.

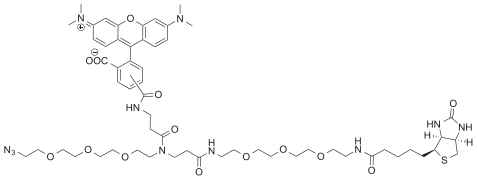
Fluorescein Biotin Azide

		Catalog#	Unit	Price
CAS:	n/a	1247–5	1 mg	$195
MW:	1156.44	1247–25	5 mg	$595
Solubility:	DMSO, DMF			
Description:	Green-fluorescent dual-labeling probe that allows for visualization and affinity purification of alkyne-tagged molecules			



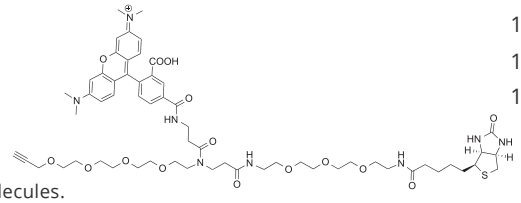
TAMRA Biotin Azide

		Catalog#	Unit	Price
CAS:	n/a	1048–1	1 mg	$95
MW:	1174.37	1048–5	5 mg	$295
Solubility:	DMSO, DMF	1048–25	25 mg	$1279
Description:	Red-fluorescent dual-labeling probe that allows for visualization and affinity purification of alkyne-tagged molecules			



TAMRA Biotin Alkyne

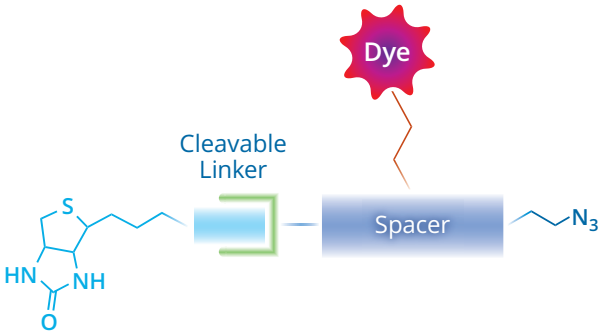
		Catalog#	Unit	Price
CAS:	n/a	1366–1	1 mg	$95
MW:	1188.42	1366–5	5 mg	$295
Solubility:	DMSO, DMF	1366–25	25 mg	$1279
Description:	Red-fluorescent dual-labeling probe that allows for visualization and affinity purification of azide-tagged molecules.			



Cy5 Biotin Azide

		Catalog#	Unit	Price
CAS:	n/a	1232–1	1 mg	$179
MW:	1494.81	1232–5	5 mg	$395
Solubility:	DMSO, DMF	1232–25	25 mg	$1395
Description:	Near-IR-fluorescent dual-labeling probe that allows for visualization and affinity purification of alkyne-tagged molecules			

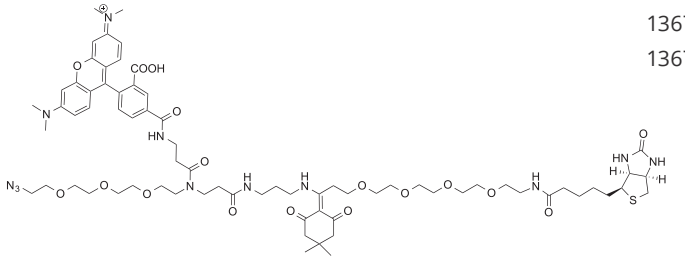
Trifunctional Click Chemistry Probes that incorporate a ligation handle, a biotin and a fluorophore have become a popular tool for for tandem labeling of proteins and subsequent detection or enrichment. However, due to the strong interaction between biotin and streptavidin harsh conditions are necessary for the elution of enriched proteins. This usually leads to contamination of the sample with non-specifically bound proteins and endogenously biotinlytated proteins, which complicates target identification.



Cleavable Trifunctional Click Chemistry Probes overcome this major drawback of the streptavidin-biotin affinity purification. These probes contain a biotin moiety linked to a "clickable" group and fluorescent dye through a spacer arm containing a cleavable Dde linker. Dde moiety is stable to rigorous, denaturing wash conditions, acidic or basic conditions including generally applied buffer systems to which the biological sample may be exposed. At the same time Dde linker can be quantitatively cleaved under mild aqueous buffered conditions with 2% hydrazine.

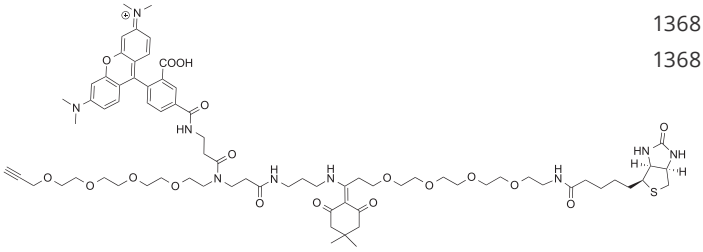
Dde TAMRA Biotin Azide

		Catalog#	Unit	Price
CAS:	n/a	1367–1	1 mg	$95
MW:	1426.72	1367–5	5 mg	$329
Solubility:	DMSO, DMF	1367–25	25 mg	$1395
Description:	Cleavable probe for detection/enrichment			



Dde TAMRA Biotin Alkyne

		Catalog#	Unit	Price
CAS:	n/a	1368–1	1 mg	$95
MW:	1426.72	1368–5	5 mg	$329
Solubility:	DMSO, DMF, MeOH	1368–25	25 mg	$1395
Description:	Cleavable probe for detection/enrichment			



Selected References:

1. Ying, L-Q., *et al.* (2011). Design of a reversible biotin analog and applications in protein labeling, detection, and isolation. *Chem. Commun.*, **47**: 8593.

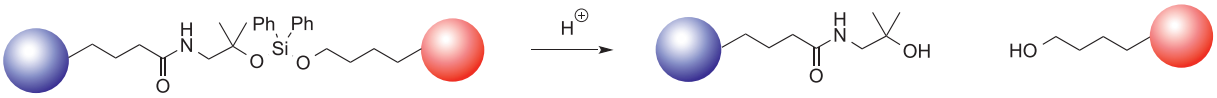
2. Berry, A. F., *et al.* (2010). Rapid Multilabel Detection of Geranylgeranylated Proteins by Using Bioorthogonal Ligation Chemistry. *ChemBioChem.*, **11**: 771.

3. Tsai, C-S., *et al.* (2010). Development of trifunctional probes for glycoproteomic analysis. *Chem. Commun.*, **46**: 15575.

4. Yang, Y., *et al.* (2013). Cleavable trifunctional biotin reagents for protein labelling, capture and release. *Chem. Commun.*, **49**: 5366.

Visit www.clickchemistrytools.com for an updated list of Trifunctional Click Chemistry Biotin Probes

DADPS Biotin Probes

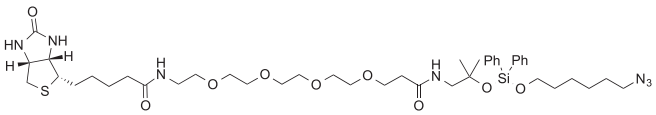


Extraordinary strength of the streptavidin-biotin interaction allows for efficient capturing of even highly dilute targets; however, it makes recovery of proteins from affinity resins challenging. Conventional methods to elute biotinylated proteins from immobilized avidin include the following: (i) denaturation of streptavidin by boiling the resin in a denaturing buffer that may include high concentrations of chaotropic salts, (ii) trypsin digestion of proteins while they are bound to the resin, or (iii) elution of proteins with excess free biotin. These protocols can co-elute contaminant proteins by releasing nonspecifically bound proteins and/or naturally biotinylated proteins concurrently with labeled proteins. In addition, some of these methods can cause elution of high levels of resin-based peptides along with the proteins of interest, resulting in further sample contamination.

DADPS (dialkoxydiphenylsilane) Biotin probes eliminate a major limitation of the streptavidin-biotin affinity purification. This reagent contains a biotin moiety linked to an azide moiety through a spacer arm containing a cleavable DADPS linker. Captured biomolecules can be efficiently released under mild conditions (5% or 10% formic acid, 0.5 h) and the small molecular fragment left on the labeled protein following cleavage. These features make the DADPS probe especially attractive for use in biomolecular labeling and proteomic studies.

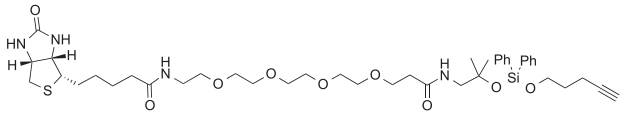
DADPS Biotin Azide

		Catalog#	Unit	Price
CAS:	n/a	1330–1	1 mg	$79
MW:	886.19	1330–5	5 mg	$195
Solubility:	DMSO, DMF	1330–25	25 mg	$479
Description:	Cleavable biotinylation reagent			



DADPS Biotin Alkyne

		Catalog#	Unit	Price
CAS:	n/a	1331–1	1 mg	$79
MW:	827.12	1331–5	5 mg	$195
Solubility:	DMSO, DMF	1331–25	25 mg	$479
Description:	Cleavable biotinylation reagent			



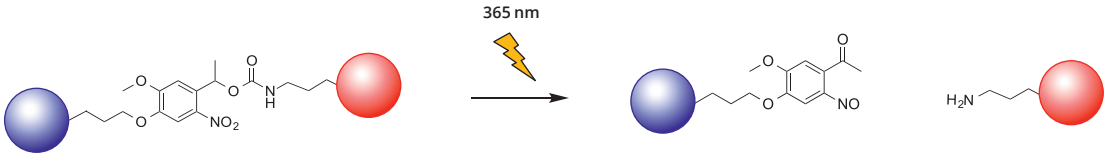
Selected References:

1. Szychowski, J., *et al.* (2010). Cleavable Biotin Probes for Labeling of Biomolecules via Azide–Alkyne Cycloaddition. *J. Am. Chem. Soc.*, **132**: 18351.

2. Jinxu, G., *et al.* (2012). Small Molecule Interactome Mapping by Photoaffinity Labeling Reveals Binding Site Hotspots for the NSAIDs. *J. Am. Chem. Soc.*, **140**: 4259.

3. Wang, J., *et al.* (2015). Mapping sites of aspirin-induced acetylations in live cells by quantitative acid-cleavable activity-based protein profiling (QA-ABPP). *Sci. Rep.*, **5**: 7896.

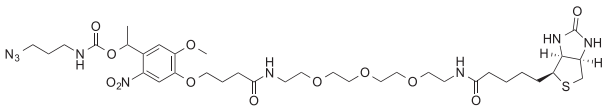
Photocleavable Biotin Probes



A major advantage of photocleavable (PC) linker over all other cleavable linkers is a reagent-free release of the captured biomolecules from streptavidin. This unique property of the photocleavable (PC) linker has promoted its application as a tool for separating, purifying, and identifying desired target biomolecules. PC probes contain a biotin moiety linked to a 'clickable' group through a spacer arm containing a photocleavable moiety. Captured biomolecules can be efficiently photoreleased, typically >90% in 5-25 minutes using an inexpensive, near-UV, low intensity lamp (e.g. 365 nm lamp at 1-5 mW/cm2).

PC Biotin Azide

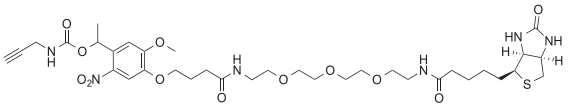
CAS: n/a
MW: 825.37
Solubility: DMSO, DMF, THF, DCM
Description: Photocleavable biotinylation reagent



Catalog#	Unit	Price
1119–10	10 mg	$179
1119–25	25 mg	$329
1119–100	100 mg	$1095

PC Biotin Alkyne

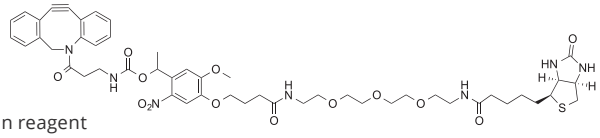
CAS: n/a
MW: 780.34
Solubility: DMSO, DMF, THF, DCM
Description: Photocleavable biotinylation reagent



Catalog#	Unit	Price
1118–10	10 mg	$179
1118–25	25 mg	$329
1118–100	100 mg	$1095

PC DBCO Biotin

CAS: n/a
MW: 1002.14
Solubility: DMSO, DMF, THF, DCM
Description: Photocleavable biotinylation reagent



Catalog#	Unit	Price
1120–10	10 mg	$179
1120–25	25 mg	$329
1120–100	100 mg	$1095

Selected References:

1. Wang, Z., *et al.* (2010). Enrichment and Site Mapping of O-Linked N-Acetylglucosamine by a Combination of Chemical/Enzymatic Tagging, Photochemical Cleavage, and Electron Transfer Dissociation Mass Spectrometry. *Mol. Cell. Proteom.*, **9**: 153.

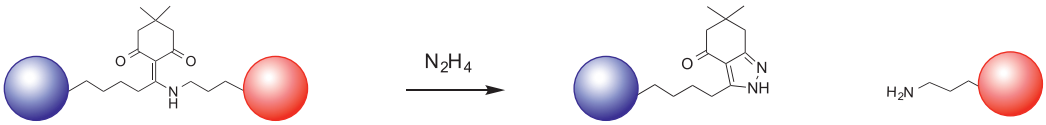
2 Pandor, M., *et al.* (2002). Photochemical Control of the Infectivity of Adenoviral Vectors Using a Novel Photocleavable Biotinylation Reagent. *Chemistry & Biology,* **9**: 567.

3. Zhou, G., *et al.* (2010). Photocleavable Peptide-Conjugated Magnetic Beads for Protein Kinase Assays by MALDI-TOF MS. *Bioconjugate Chem.*, **21**: 1917.

4. Kim, H., *et al.* (2009). An Azido-Biotin Reagent for Use in the Isolation of Protein Adducts of Lipid-derived Electrophiles by Streptavidin Catch and Photorelease. *Mol. Cell. Proteom.*, **8**: 2080.

5. Szychowski, J., *et al.* (2010). Cleavable Biotin Probes for Labeling of Biomolecules via Azide-Alkyne Cycloaddition. *J. Am. Chem. Soc.*, **132**: 18351.

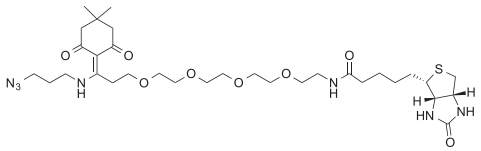
Dde Biotin Probes



Novel click chemistry probes for enrichment of azide- or alkyne-tagged biomolecules that overcomes a major drawback of the streptavidin-biotin affinity purification associated with extraordinary strength of the streptavidin-biotin interaction. These probes contain a biotin moiety linked to a "clickable" group through a spacer arm containing a Dde linker. Dde moiety is stable to rigorous, denaturing wash conditions, acidic or basic conditions including generally applied buffer systems to which the biological sample may be exposed. At the same time Dde linker can be quantitatively cleaved under mild aqueous buffered conditions with 2% hydrazine. Finally, the cleaved moiety that remains on the modified peptide minimally changes the peptide mass and generates an additional positive charge, which facilitates peptide sequencing by ETD.

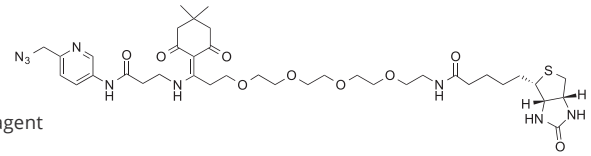
Dde Biotin Azide

		Catalog#	Unit	Price
CAS:	n/a	1136–10	10 mg	$179
MW:	695.37	1136–25	25 mg	$329
Solubility:	DMSO, DMF, THF, DCM	1136–100	100 mg	$1095
Description:	Cleavable biotinylation reagent			



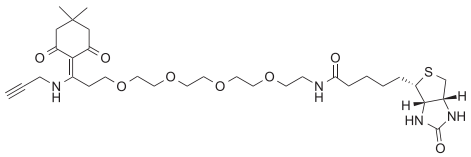
Dde Biotin Picolyl Azide

		Catalog#	Unit	Price
CAS:	n/a	1186–5	5 mg	$129
MW:	815.98	1186–10	10 mg	$225
Solubility:	DMSO, DMF, THF, DCM	1186–100	100 mg	$1295
Description:	Cleavable biotinylation reagent			



Dde Biotin Alkyne

		Catalog#	Unit	Price
CAS:	n/a	1137–10	10 mg	$179
MW:	650.83	1137–25	25 mg	$329
Solubility:	DMSO, DMF, THF, DCM	1137–100	100 mg	$1095
Description:	Cleavable biotinylation reagent			



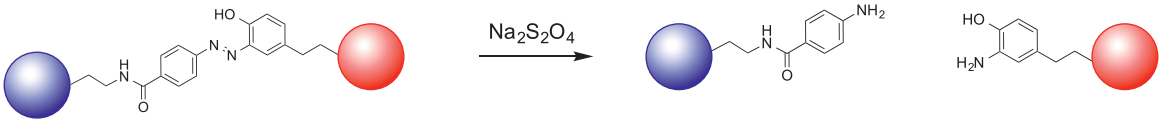
Selected References:

1. Yang Y., *et al.* (2013). Cleavable Trifunctional Biotin Reagents for Protein Labeling, Capture, and Release. *Chem. Commun.*, **48**: 5366

2. Matthew E.G., *et al.* (2016) Comprehensive Mapping of *O*-GlcNAc Modification Sites Using a Chemically Cleavable Tag. *Mol. Biosyst.* **12**: 1756.

3. Gertsik N., *et al.* (2017). Mapping the Binding Site of BMS-708163 on y-Secretase with Cleavable Photoprobes. *Cell Chemical Biology*, **32**: 3.

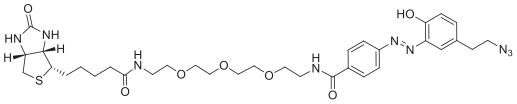
Diazo Biotin Probes



Diazobenzene-based biotin probes can be chemoselectively cleaved in under mild aqueous buffered conditions with 100 mM sodium dithionite. Diazobenzene linker is stable towards acidic or basic conditions, including generally applied buffer systems to which the biological sample may be exposed.

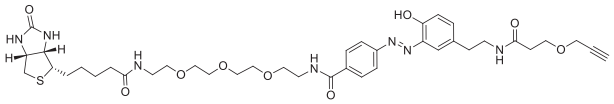
Diazo Biotin Azide

		Catalog#	Unit	Price
CAS:	1339202-33-3	1041–10	10 mg	$179
MW:	711.83	1041–25	25 mg	$329
Solubility:	DMSO, DMF	1041–100	100 mg	$1095
Description:	Cleavable biotinylation reagent			



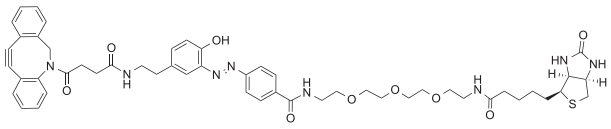
Diazo Biotin Alkyne

		Catalog#	Unit	Price
CAS:	n/a	1042–10	10 mg	$179
MW:	795.54	1042–25	25 mg	$329
Solubility:	DMSO, DMF	1042–100	100 mg	$1095
Description:	Cleavable biotinylation reagent			



Diazo DBCO Biotin

		Catalog#	Unit	Price
CAS:	n/a	1043–10	10 mg	$179
MW:	973.15	1043–25	25 mg	$329
Solubility:	DMSO, DMF, DCM, THF	1043–100	100 mg	$1095
Description:	Cleavable biotinylation reagent			



Selected References:

1. Yang Y., *et al.* (2013). Cleavable Trifunctional Biotin Reagents for Protein Labeling, Capture, and Release. *Chem. Commun.*, **48**: 5366

2. Yang Y-Y., *et al.* (2010) Bioorthogonal Chemical Reporters for Monitoring Protein Acetylation. *J. Am. Chem. Soc.* **132**: 3640.

3. Rangan K. J., *et al.* (2010). Rapid visualization and large-scale profiling of bacterial lipoproteins with chemical reporters. *J. Am. Chem. Soc*, **132**: 10628.

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Click-&-Go™ Protein Reaction Buffer Kit

The Click-&-Go™ Protein Reaction Buffer Kit provides researchers everything required to perform the click reaction on azide or alkyne tagged proteins with the corresponding click detection reagent for subsequent downstream analysis.

The performance and components of this kit are identical to Click-iT® Protein Reaction Buffer Kit from Thermo Fisher Scientific (Invitrogen).

Product #	Description	Pkg. Size	Price
1262	Click-&-Go™ Protein Reaction Buffer Kit	1 kit	$145.00

Click-&-Go™ Cell Reaction Buffer Kit

The Click-&-Go™ Cell Reaction Buffer Kit provides researchers everything required to perform the click reaction on cells tagged with an azide or alkyne and with the corresponding click detection reagent for subsequent downstream analysis.

The performance and components of this kit are identical to Click-iT® Protein Reaction Buffer Kit from Thermo Fisher Scientific (Invitrogen).

Product #	Description	Pkg. Size	Price
1263	Click-&-Go™ Cell Reaction Buffer Kit	1 kit	$145.00

Click-&-Go™ Click Chemistry Reaction Buffer Kit

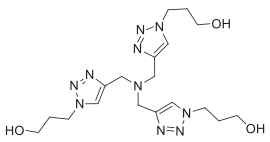
General purpose, all-inclusive kit provides researchers everything required to perform copper catalyzed click reaction between terminal alkyne and azide in aqueous or partially organic media. The kit includes sufficient reagents are provided for either 25 or 500 labeling reactions.

Product #	Description	Pkg. Size	Price
1001	Click-&-Go™ Click Chemistry Reaction Bufffer Kit *25 labeling reactions*	1 kit	**$145.00**
1321	Click-&-Go™ XL Click Chemistry Reaction Bufffer Kit *500 labeling reactions*	1 kit	**$995.00**

Click Chemistry Auxiliary Reagents

THPTA

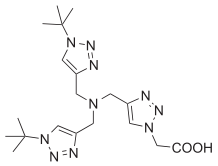
CAS: 760952-88-3
MW: 434.50
Solubility: Water, DMSO, DMF
Description: Water-soluble chelating agent



Catalog#	Unit	Price
1010–100	100 mg	$55
1010–500	500 mg	$239
1010–1000	1000 mg	$395
1010–5g	5 g	$1650

BTTAA

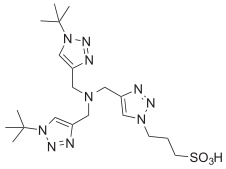
CAS: 1334179-85-9
MW: 430.52
Solubility: Water, DMSO, DMF
Description: Water-soluble chelating agent



Catalog#	Unit	Price
1236–100	100 mg	$129
1236–500	500 mg	$495
1236–1000	1000 mg	$895

BTTES

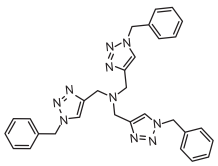
CAS: n/a
MW: 494.62
Solubility: Water, DMSO, DMF
Description: Water-soluble chelating agent



Catalog#	Unit	Price
1237–100	100 mg	$149
1237–500	500 mg	$595
1237–1000	1000 mg	$1295

TBTA

CAS: 510758-28-8
MW: 530.62
Solubility: Water, DMSO, DMF
Description: Chelating agent



Catalog#	Unit	Price
1061–100	100 mg	$49
1061–500	500 mg	$85
1061–1000	1000 mg	$120

Click-&-Go™ Plus Imaging Kits

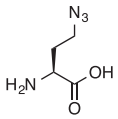
Click-&-Go™ Plus Imaging Kit is general purpose imaging kit that is designed to perform a high sensitivity imaging of moderate-to-low abundance targets, compounds that are sensitive to copper, and for all other applications where increased sensitivity and faster reaction times is of great value. The labeling kit utilizes copper-chelating picolyl azide that dramatically accelerates the Cu(I)-catalyzed azide–alkyne cycloaddition (CuAAC) reaction under conditions relevant to biomolecular labeling.

Each Click-&Go™ Plus Imaging Kit includes 100 μg of fluorescent picolyl azide and all of the reagents required to create a reaction cocktail with the optimal copper and chelate concentration for any click chemistry-based labeling or detection application.

Product #	Description	Pkg. Size	Price
1311	Click-&Go™ Plus Biotin Labeling Kit	1 kit	$219.00
1313	Click-&Go™ Plus AF™ 405 Labeling Kit	1 kit	$219.00
1314	Click-&Go™ Plus AF™ 488 Labeling Kit	1 kit	$219.00
1315	Click-&Go™ Plus AF™ 532 Labeling Kit	1 kit	$219.00
1316	Click-&Go™ Plus AF™ 546 Labeling Kit	1 kit	$219.00
1317	Click-&Go™ Plus AF™ 555 Labeling Kit	1 kit	$219.00
1318	Click-&Go™ Plus AF™ 568 Labeling Kit	1 kit	$219.00
1319	Click-&Go™ Plus AF™ 594 Labeling Kit	1 kit	$219.00
1320	Click-&Go™ Plus AF™ 647 Labeling Kit	1 kit	$219.00

L-Azidohomoalanine (AHA)

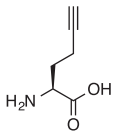
CAS: 942518-29-8
MW: 180.59
Solubility: Water, DMF, DMSO



Catalog#	Unit	Price
1066–25	25 mg	$95
1066–100	100 mg	$195
1066–1000	1000 mg	$495
1066–5g	5 g	$1395

L-Homopropargylglycine (HPG)

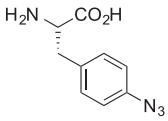
CAS: 98891-36-2
MW: 163.60
Solubility: Water, DMSO, DMF



Catalog#	Unit	Price
1067–25	25 mg	$95
1067–100	100 mg	$195
1067–1000	1000 mg	$1095

4-Azido-L-phenylalanine

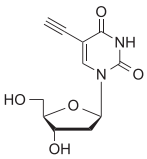
CAS: 33173-53-4
MW: 206.20
Solubility: Water, DMSO, DMF



Catalog#	Unit	Price
1406–1g	1 g	$230
1406–5g	5 g	$895
1406–25g	25 g	$2495

5-Ethynyl-2′-deoxyuridine (EdU)

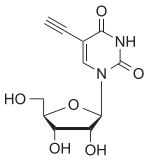
CAS: 61135-33-9
MW: 252.23
Solubility: Water, DMSO, DMF



Catalog#	Unit	Price
1149–25	25 mg	$45
1149–100	100 mg	$95
1149–500	500 mg	$295
1149–1000	1000 mg	$565

5-Ethynyl Uridine (5-EU)

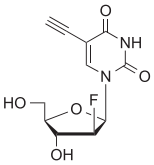
CAS: 69075-42-9
MW: 268.22
Solubility: Water, DMSO, DMF



Catalog#	Unit	Price
1261–10	10 mg	$79
1261–25	25 mg	$179
1261–100	100 mg	$495
1261–500	500 mg	$1195

F-ara-EdU

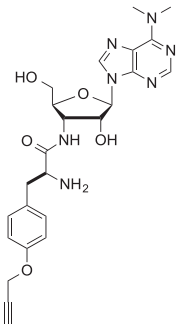
CAS: n/a
MW: 270.22
Solubility: Water, DMSO, DMF



Catalog#	Unit	Price
1403–5	5 mg	$45
1403–25	25 mg	$195
1403–100	100 mg	$495
1403–500	500 mg	$1695

O-propargyl-puromycin (OPP)

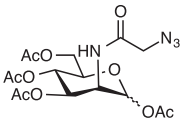
CAS: n/a
MW: 495.54
Solubility: Water, DMSO, DMF



Catalog#	Unit	Price
1407–5	5 mg	$295
1407–25	25 mg	$1795
1407–100	100 mg	$4895

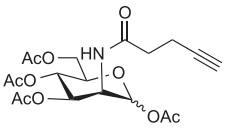
N-azidoacetylmannosamine tetraacylated (Ac4ManNAz)

		Catalog#	Unit	Price
CAS:	361154-30-5	1084–5	5 mg	$129
MW:	430.37	1084–25	25 mg	$235
Solubility:	DMSO, DMF, MeOH	1084–100	100 mg	$595



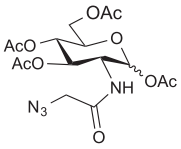
N-(4-pentynoyl)-mannosamine tetraacylated (Ac4ManNAl)

		Catalog#	Unit	Price
CAS:	935658-93-8	1154–5	5 mg	$129
MW:	427.40	1154–25	25 mg	$235
Solubility:	DMSO, DMF, MeOH	1154–100	100 mg	$595



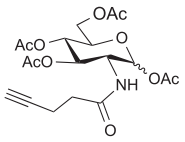
N-azidoacetylglucosamine tetraacylated (Ac4GlcNAz)

		Catalog#	Unit	Price
CAS:	98924-81-3	1085–5	5 mg	$129
MW:	430.37	1085–25	25 mg	$235
Solubility:	DMSO, DMF, MeOH	1085–100	100 mg	$595



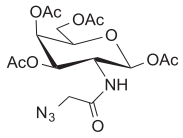
N-(4-pentynoyl)-glucosamine tetraacylated (Ac4GlcNAl)

		Catalog#	Unit	Price
CAS:	1361993-37-4	1155–5	5 mg	$129
MW:	427.40	1155–25	25 mg	$235
Solubility:	DMSO, DMF, MeOH	1155–100	100 mg	$595



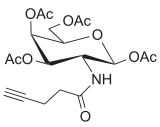
N-azidoacetylgalactosamine tetraacylated (Ac4GalNAz)

		Catalog#	Unit	Price
CAS:	653600-56-7	1086–5	5 mg	$129
MW:	430.37	1086–25	25 mg	$235
Solubility:	DMSO, DMF, DCM, THF	1086–100	100 mg	$595



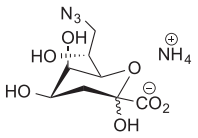
N-(4-pentynoyl)-galactosamine tetraacylated (Ac4GalNAl)

		Catalog#	Unit	Price
CAS:	1658458-26-4	1156–5	5 mg	$129
MW:	427.40	1156–25	25 mg	$235
Solubility:	DMSO, DMF, DCM, THF	1156–100	100 mg	$595



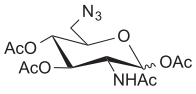
Kdo Azide

		Catalog#	Unit	Price
CAS:	1380099-68-2	1241–10	10 mg	$195
MW:	280.24	1241–25	25 mg	$395
Solubility:	DMSO, DMF, Water	1241–100	100 mg	$895



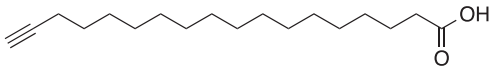
6-azido-6-deoxy-N-acetyl-glucosamine triacylated (Ac3-6AzGlcNAc)

		Catalog#	Unit	Price
CAS:	n/a	1258–5	5 mg	$129
MW:	372.33	1258–25	25 mg	$235
Solubility:	DMSO, DMF, DCM, THF	1258–100	100 mg	$595



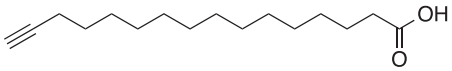
Alkynyl Stearic Acid

		Catalog#	Unit	Price
CAS:	34450-18-5	1166–5	5 mg	$79
MW:	280.45	1166–25	25 mg	$195
Solubility:	DMSO, DMF, DCM, THF	1166–100	100 mg	$495



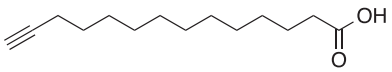
Alkynyl Palmitic Acid

		Catalog#	Unit	Price
CAS:	99208-90-9	1165–5	5 mg	$79
MW:	252.39	1165–25	25 mg	$195
Solubility:	DMSO, DMF, DCM, THF	1165–100	100 mg	$495



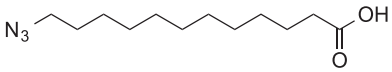
Alkynyl Myristic Acid

		Catalog#	Unit	Price
CAS:	82909-47-5	1164–5	5 mg	$79
MW:	244.32	1164–25	25 mg	$195
Solubility:	DMSO, DMF, DCM, THF	1164–100	100 mg	$495



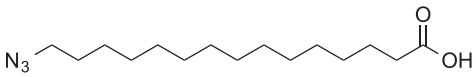
Azido Myristic Acid

		Catalog#	Unit	Price
CAS:	80667-36-3	1345–1	1 mg	$129
MW:	241.33	1345–25	25 mg	$179
Solubility:	DMSO, DMF, DCM, THF	1345–100	100 mg	$495



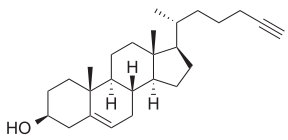
Azido Palmitic Acid

		Catalog#	Unit	Price
CAS:	118162-46-2	1346–5	5 mg	$129
MW:	283.41	1346–25	25 mg	$195
Solubility:	DMSO, DMF, DCM, THF	1346–100	100 mg	$495



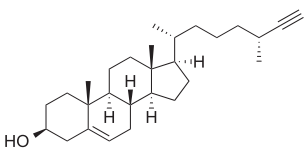
Alkyne Cholesterol

		Catalog#	Unit	Price
CAS:	1631985-09-5	1409–1	1 mg	$295
MW:	396.61	1409–5	5 mg	$1795
Solubility:	DMSO, DMF, DCM, THF	1409–25	25 mg	$4895



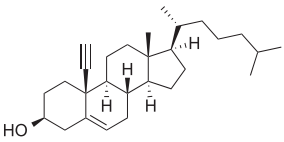
27-Alkyne Cholesterol

		Catalog#	Unit	Price
CAS:	1527467-07-7	1410–1	1 mg	$295
MW:	396.66	1410–5	5 mg	$1795
Solubility:	DMSO, DMF, DCM, THF	1410–25	25 mg	$4895



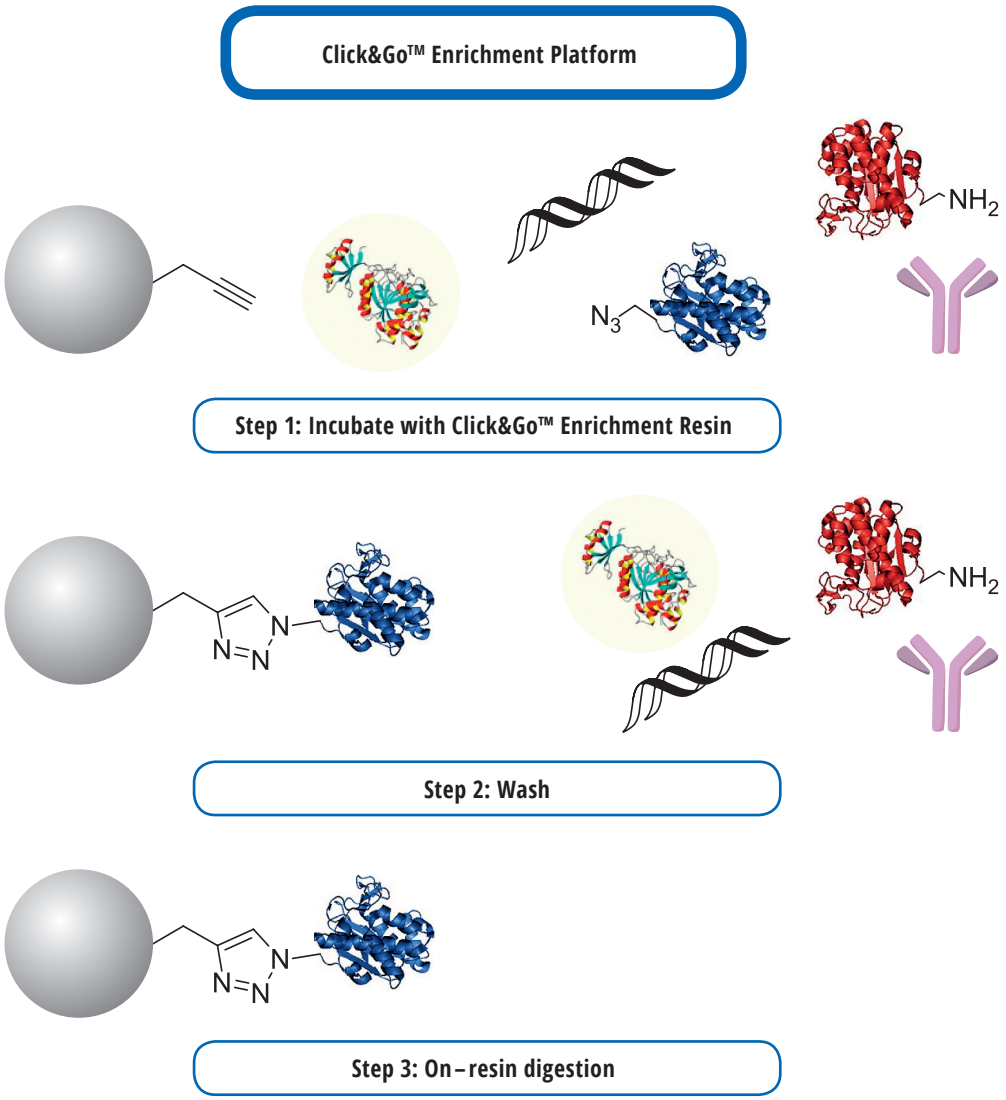
E-Cholesterol Alkyne

		Catalog#	Unit	Price
CAS:	n/a	1411–1	1 mg	$295
MW:	396.66	1411–5	5 mg	$1795
Solubility:	DMSO, DMF, DCM, THF	1411–25	25 mg	$4895



Enrichment Media and Kits

Click & Go™ enrichment media is an efficient, biotin/streptavidin–free tool for capturing azide–or alkyne–tagged biomolecules onto an agarose resin via click reaction. Superior to biotin or lectin based enrichment approaches. Ideal for covalent capture of specific sub–classes of proteins which have been metabolically, enzymatically, or chemically azido–or alkyne–tagged onto a resin via Cu(I)–catalyzed azide–alkyne cycloaddition (CuAAC) or strain–promoted azide–alkyne cycloaddition (SPAAC) reactions. The resin containing the covalently attached proteins can be washed with high stringency, virtually eliminating any non–specifically bound proteins. Upon protease digestion, it yields a highly specific peptide pool that is ideal for mass spectroscopy (e.g., LC MS/MS) based analysis.



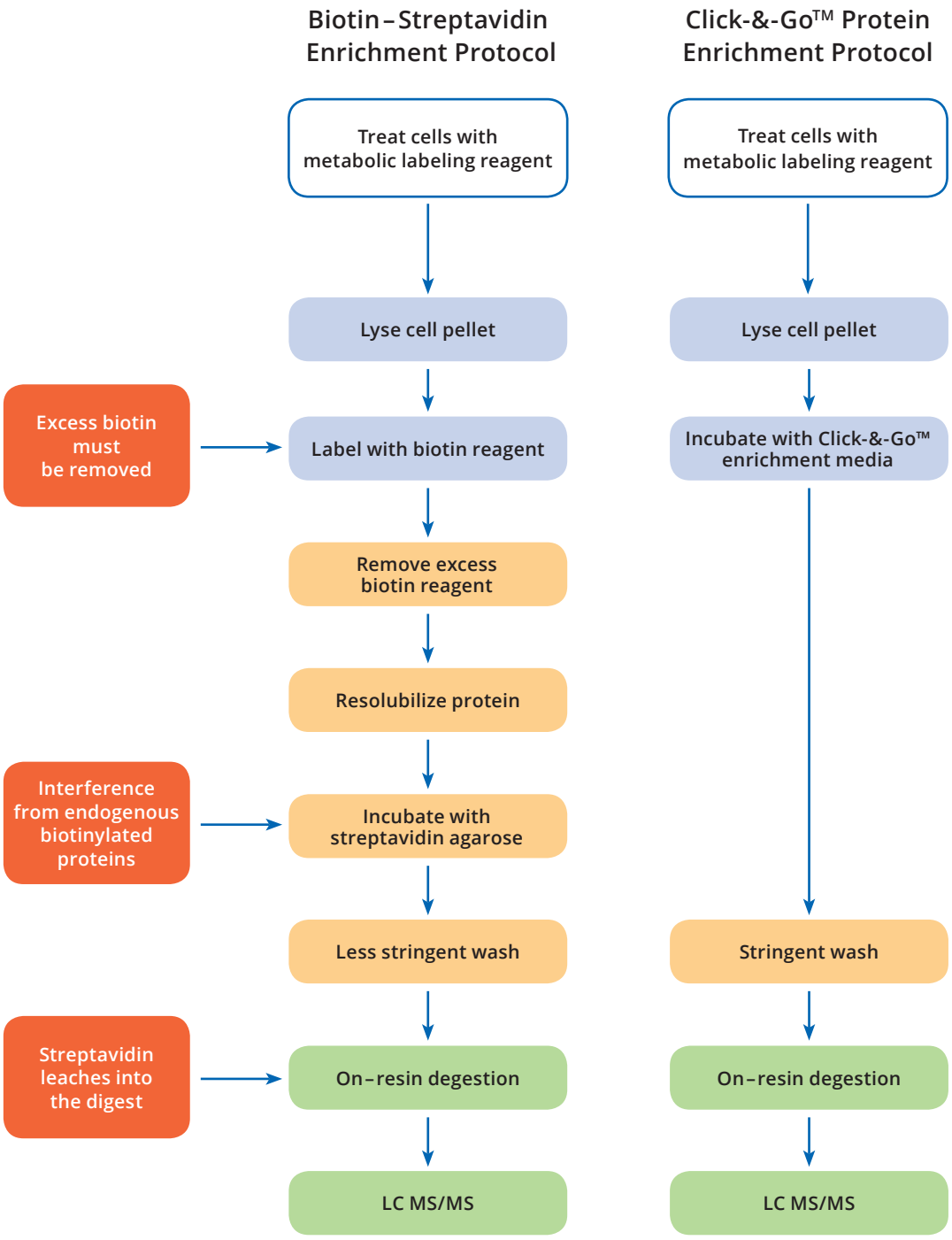


Figure 11. Schematic representation of pull–down workflows for biotin–streptavidin and Click-&-Go™ enrichment protocols.

Click-&-Go Protein Capture Kits

All-inclusive kits for covalent capture of azido- or alkyne-tagged proteins on a alkyne- or azide-agarose resin supplied. The kit contains specially formulated components to both catalyze click reaction and prevent non-specific binding to the alkyne-modified resins.

Product #	Description	Pkg. Size	Price
1039	Click-&-Go Protein Enrichment Kit *for capture of alkyne-modified proteins*	1 kit	$375.00
1033	Click-&-Go Protein Enrichment Kit *for capture of azide-modified proteins*	1 kit	$375.00
1235	Click-&-Go Plus Protein Enrichment Kit *for capture of alkyne-modified proteins*	1 kit	$435.00

Click Chemistry Capture Kit

Click Chemistry Capture Kit provides all necessary auxiliary reagents* for covalent capture of metabolically, azido–or alkyne–tagged proteins. The kit contains specially formulated components to both catalyze click labeling reaction and prevent non–specific binding to alkyne–or azide–modified resins.

Product #	Description	Pkg. Size	Price
1065	Click Chemistry Capture Kit	1 kit	$295.00

* enrichment media is not provided

Click Functionalized Agarose

Azide, Alkyne, or DBCO modified agarose used for covalent capturing alkyne-, or azide-tagged biopolymers.

Description	Pkg. Size	Product #	Price
Alkyne agarose resin, 50% slurry	2 mL	1032–2	$129.00
	25 mL	1032–25	$895.00
Azide agarose resin, 50% slurry	2 mL	1038–2	$129.00
	25 mL	1038–25	$895.00
DBCO agarose resin, 50% slurry	2 mL	1034–2	$129.00
	25 mL	1034–25	$1095.00

Click Functionalized Magnetic Beads

Azide, Alkyne, or DBCO modified, uniformed magnetic beads used for covalent capturing alkyne-, or azide-tagged biopolymers.

Description	Pkg. Size	Product #	Price
Alkyne Magnetic Beads, 10 mg/mL	1 mL	1035–1	$139.00
	5 mL	1035–5	$520.00
Azide Magnetic Beads, 10 mg/mL	1 mL	1036–1	$139.00
	5 mL	1036–5	$520.00
DBCO Magnetic Beads, 10 mg/mL	1 mL	1037–1	$139.00
	5 mL	1037–5	$520.00

Cleavable Protein Enrichment Kits

Cleavable Click-&-Go™ Protein Enrichment Kits is an efficient, biotin/streptavidin-free tool for capturing azide- or alkyne-tagged biomolecules on a cleavable agarose resin via click reaction and its subsequent selective release. Azide-, or alkyne-modified proteins, or their post-translationally modified forms, are captured from complex protein extracts on the cleavable agarose resin supplied. Once proteins covalently attached to the resin via copper catalyzed click chemistry, beads can be washed with highest stringency virtually eliminating any non-specifically bound proteins. Upon cleavage, it yields a highly enriched population of nascent proteins for downstream use.

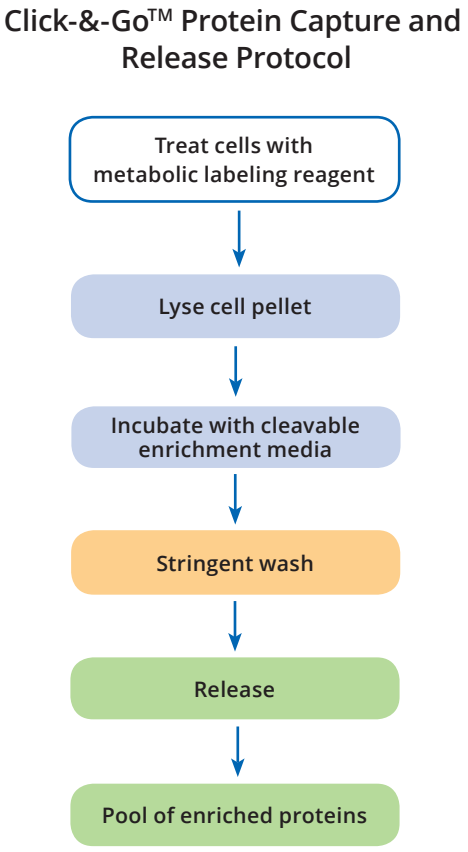


Figure 12. Schematic representation of pull-down workflows for Click-&-Go™ catch and release protocols.

Click-&-Go™ Dde Protein Enrichment Kits

*** for capture and release of azide- or alkyne modified proteins***

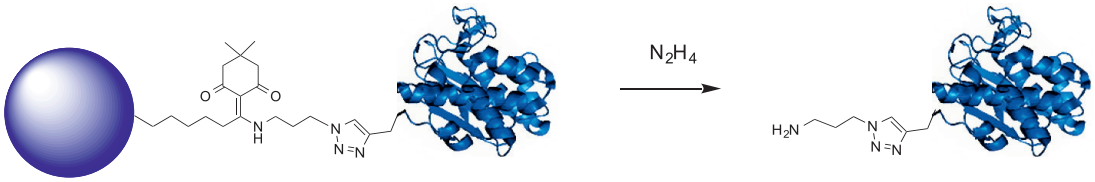


Figure 13. Schematic representation of hydrazine induced release.

Once azide- or alkyne-tagged proteins covalently attached to the resin via stable Dde linker, beads can be washed with highest stringency virtually eliminating any non-specifically bound proteins. Dde linker is stable towards acidic or basic conditions, generally applied buffer systems, and reactive species that are present in a cell extract.

The captured proteins can be chemoselectively released under mild aqueous buffered conditions with 2% hydrazine to yield highly enriched population of intact proteins.

Click-&-Go™ Dde Protein Enrichment Kits provide cleavable agarose and all necessary auxiliary reagents for the covalent capture and release of azide- or alkyne-tagged proteins.

Product #	Description	Pkg. Size	Price
1153	Click-&-Go Dde Protein Enrichment Kit *for capture and release of alkyne-modified proteins*	1 kit	$375.00
1152	Click-&-Go Dde Protein Enrichment Kit *for capture and release of azide-modified proteins*	1 kit	$375.00
1139	Dde azide agarose resin, 50% slurry	2 mL	$159.00
1140	Dde alkyne agarose resin, 50% slurry	2 mL	$159.00

Click-&-Go™ PC Protein Enrichment Kits

for capture and photorelease of azide- or alkyne modified proteins

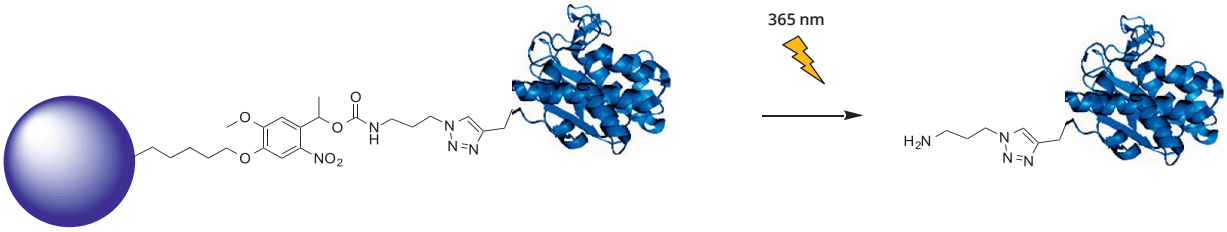


Figure 14 Schematic representation of photorelease.

Photoliable linker is stable towards various conditions (acidic, basic, including generally applied buffer systems) to which the biological sample may be exposed, and can also withstand the reactive (nucleophilic) species that are present in a cell extract. At the same time, captured biomolecules can be efficiently and selectively released under mind non-denaturating conditions.

The cleavage of photoliable probes is achieved with near-UV (365 nm) irradiation using an inexpensive, low intensity lamp that can be found virtually in every laboratory. Selective, regant-free release conditions and high stability in various chemical conditions are great advantages of photolabile capture and release kits.

Click-&-GoTM PC Protein Enrichment Kits provide photocleavable agarose and all necessary auxiliary reagents for the covalent capture and release of azide- or alkyne-tagged proteins.

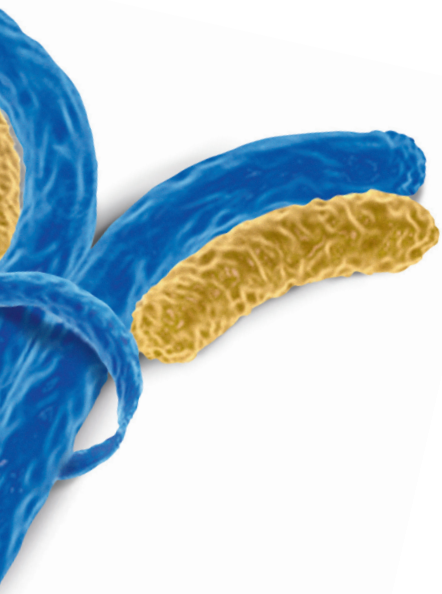
Product #	Description	Pkg. Size	Price
1151	Click-&-Go PC Protein Enrichment Kit *for capture and photorelease of alkyne-modified proteins*	1 kit	$375.00
1150	Click-&-Go PC Protein Enrichment Kit *for capture and photorelease of azide-modified proteins*	1 kit	$375.00
1141	PC Azide Agarose, 50% slurry	2 mL	$159.00
1142	PC Azide Agarose, 50% slurry	2 mL	$159.00

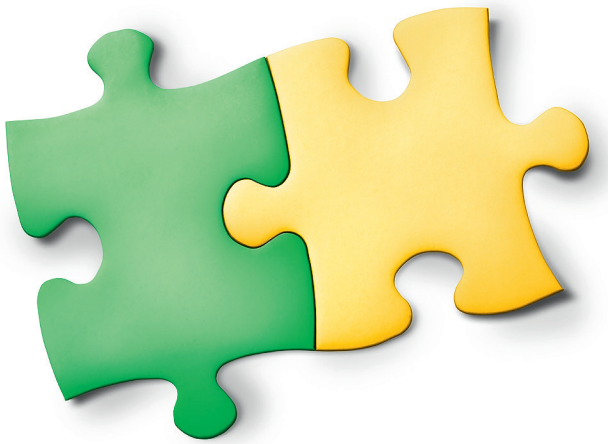
Tetrazine/TCO Modified Resins

Tetrazine/TCO Functionalized Agarose

Product #	Description	Pkg. Size	Price
1198	TCO Agarose, 50% slurry	2 mL	$129.00
		5 mL	$219.00
		25 mL	$895.00
1199	Tetrazine Agarose, 50% slurry	2 mL	$129.00
		5 mL	$219.00
		25 mL	$895.00

CLICK CHEMISTRY TOOLS





Catalog & Reference Manual