

## XFD594 BCN

Catalog Number: 70608

Unit Size: 1 mg

### Product Details

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Storage Conditions	Freeze (< -15 °C), Minimize light exposure
Expiration Date	12 months upon receiving

### Chemical Properties

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Appearance	Solid
Molecular Weight	N/A
Soluble In	DMSO

### Spectral Properties

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Excitation Wavelength	590 nm
Emission Wavelength	618 nm

### Applications

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XFD594 BCN, a clickable derivative of XFD594, is a bright red fluorescent dye used for labeling peptides, oligonucleotides, proteins, and other biomolecules via click chemistry. Structurally similar to Alexa Fluor™ 594 (Thermo Fisher Scientific), it is efficiently excited by the 561 nm or 594 nm laser lines and is compatible with RFP filters like Texas Red. It demonstrates excellent solubility in aqueous solutions and is pH-insensitive across a broad range (pH 4–10), ensuring reliable and stable signal generation under diverse experimental conditions. XFD594 is particularly well-suited for multicolor fluorescence microscopy, flow cytometry, and advanced SRM imaging techniques like dSTORM, SIM, STED and TPE. It can be conjugated to proteins at high molar ratios with minimal self-quenching, resulting in brighter conjugates.

To improve conjugation performance, XFD594 BCN incorporates a PEG spacer, which reduces steric hindrance and minimizes potential interference with target binding sites. This design maximizes conjugation efficiency while preserving the biological activity of the resulting conjugate. The bicyclononyne (BCN) moiety enables strain-promoted azide–alkyne cycloaddition (SPAAC) with azido groups, forming stable triazole linkages under catalyst-free conditions. In addition, unlike dibenzocyclooctyne (DBCO), BCN also reacts efficiently with tetrazines through an inverse electron-demand Diels–Alder (IEDDA) reaction. This reaction is rapid, selective, and bioorthogonal, allowing labeling of biomolecules under physiological conditions without the need for metal catalysts or disruption of native biological processes.