XFD790 BCN

Catalog Number: 70613
Unit Size: 1 mg

Product Details

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

Chemical Properties

Appearance	Solid
Molecular Weight	N/A
Soluble In	DMSO

Spectral Properties

Excitation Wavelength	782 nm
Emission Wavelength	805 nm

Applications

XFD790 BCN, a clickable derivative of XFD790, is a bright near-infrared fluorescent dye used for labeling peptides, oligonucleotides, and other biomolecules via click chemistry. Structurally similar to Alexa Fluor™ 790 (Thermo Fisher Scientific), it exhibits high aqueous solubility and stable fluorescence intensity across a wide pH range (4–10), ensuring reliable performance under varied experimental conditions. Its long-wavelength emission minimizes background autofluorescence and enhances signal-to-noise ratios in complex biological samples, including tissues. As the longest-wavelength fluorophore in the XFD series, XFD790 BCN offers effective spectral separation from far-red dyes such as iFluor® 647, XFD647, and APC, supporting accurate multicolor fluorescence analysis and applications such as small animal in vivo imaging (SAIVI) and two-color Western blotting using the LI-COR™ Odyssey™ infrared imaging system.

To improve conjugation performance, XFD790 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.