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A hemicyanine-based colorimetric turn-on fluorescent probe for β -galactosidase activity detection and application in living cells

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Abstract

Ovarian cancer was a common malignant tumor of female genital organs and accounted for 3.5% of new cases of female malignancy. Compared with normal ovarian cancer, β -gal activity in primary ovarian cancer was much higher. Moreover, β -gal played hypostatic roles in maintaining human biological systems. Therefore, it's of great significance to develop efficient detection methods for quantitative determination of β -gal activity. A new-type colorimetric and turn-on fluorescent probe called MC- β Gal was designed for the specific detection of β -gal. MC- β Gal was constructed based on merocyanine as a chromophore with ICT effect and D-galactose residues as a fluorescence-quenching and enzyme-responsive moiety. MC- β Gal had the advantages of high sensitivity, superior selectivity, low limit of detection and a visible color change. In addition, low cytotoxicity and bioimaging experiments had demonstrated that MC- β Gal successfully visual detects endogenous and exogenous

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