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A Nontoxic, Photostable and High Signal-to-Noise Ratio Mitochondrial Probe with Mitochondrial Membrane Potential and Viscosity Detectivity

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Abstract:

Herein, we reported a yellow emission probe 1-methyl-4-(6-morpholino-1, 3-dioxo-1H-benzo[de]isoquinolin-2(3H)-yl) pyridin-1-ium iodide which could specifically stain mitochondria in living immortalized and normal cells. In comparison to the common mitochondria tracker (Mitotracker Deep Red, MTDR), this probe was nontoxic, photostable and ultrahigh signal-to-noise ratio, which could real-time monitor mitochondria for a long time. Moreover, this probe also showed high sensitivity towards mitochondrial membrane potential and intramitochondrial viscosity change. Consequently, this probe was used for imaging mitochondria, detecting changes in mitochondrial membrane potential and intramitochondrial viscosity in physiological and pathological processes.

Keywords: Fluorescent probe; Mitochondria-targeting; Mitochondrial membrane potential, Viscosity