

The development of a light-up red-emitting fluorescent probe based on a G-quadruplex specific cyanine dye

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Table S1 The oligonucleotides used in this study.

Name	Sequence(5' to 3')
<i>c-myc</i>	TGGGGAGGGTGGGGAGGGTGGGGAAGG
<i>bcl-2</i>	GGGCGGGCGCGGGAGGAAGGGGGCGGG
<i>kit1</i>	AGGGAGGGCGCTGGGAGGAGGG
<i>Kras</i>	AGGGCGGTGTGGGAAGAGGGAAGAGGGGGAGG
<i>HT 22</i>	AGGGTTAGGGTTAGGGTTAGGG
<i>Hras</i>	TCGGGTTGCGGGCGCAGGGCACGGGCG
<i>TBA</i>	GGTTGGTGTGGTTGG
ssDNA1	TAACATGTTCGTCGATTAGGTACGACT
ssDNA2	AGTCGTACCTAATCGACGAACATGTTA
dsDNA	ssDNA1+ ssDNA2
27	
ct-DNA	Calf thymus DNA

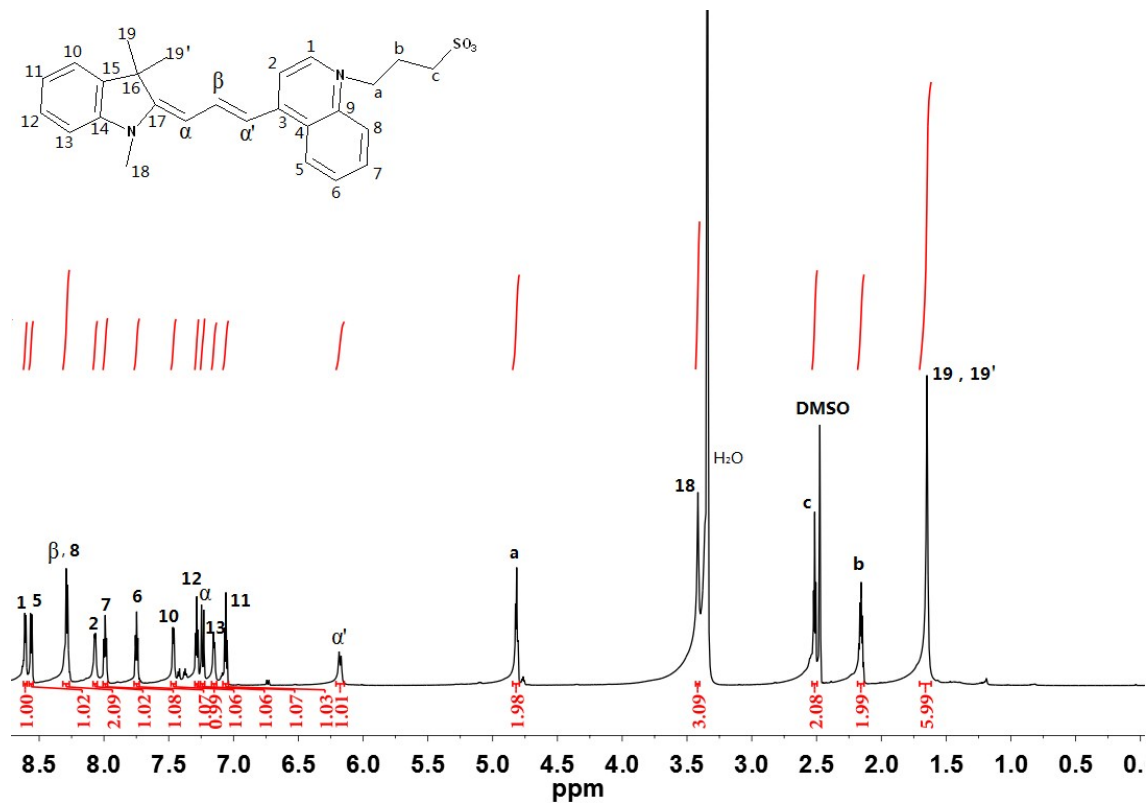


Fig. S1. The $^1\text{H NMR}$ spectrum of Dir.

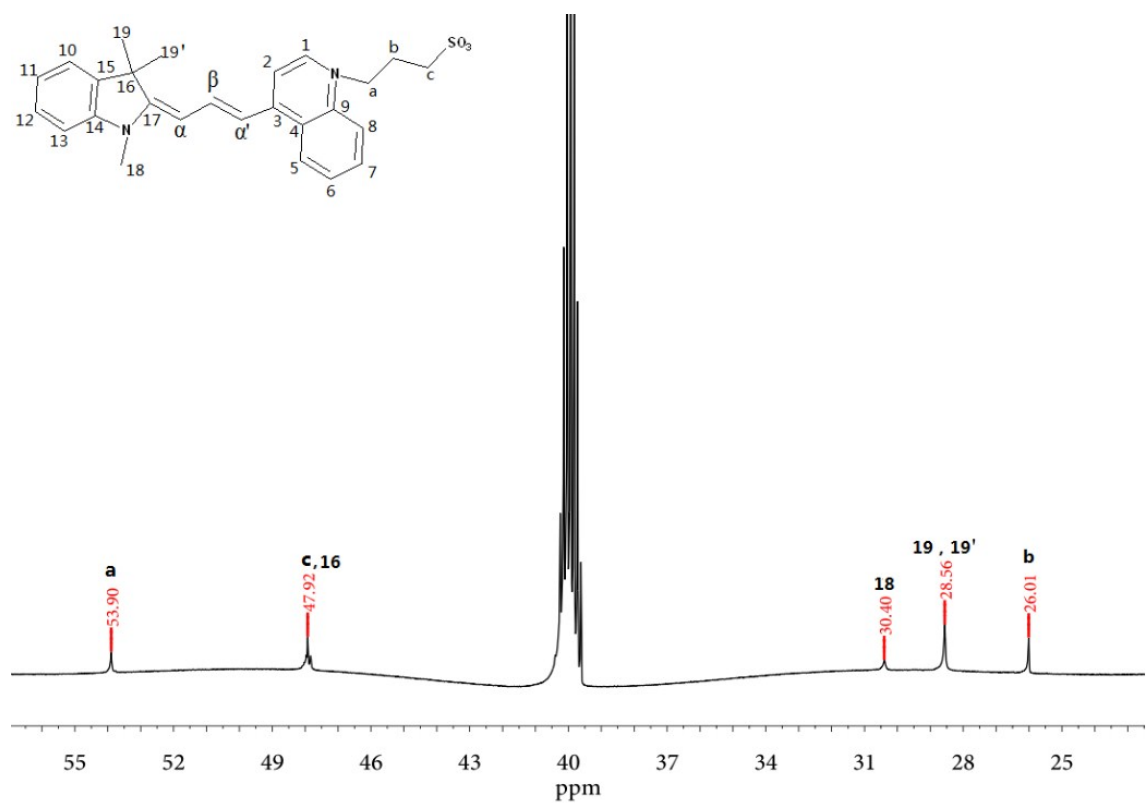


Fig. S2 The $^{13}\text{C NMR}$ expansion 1 of Dir.

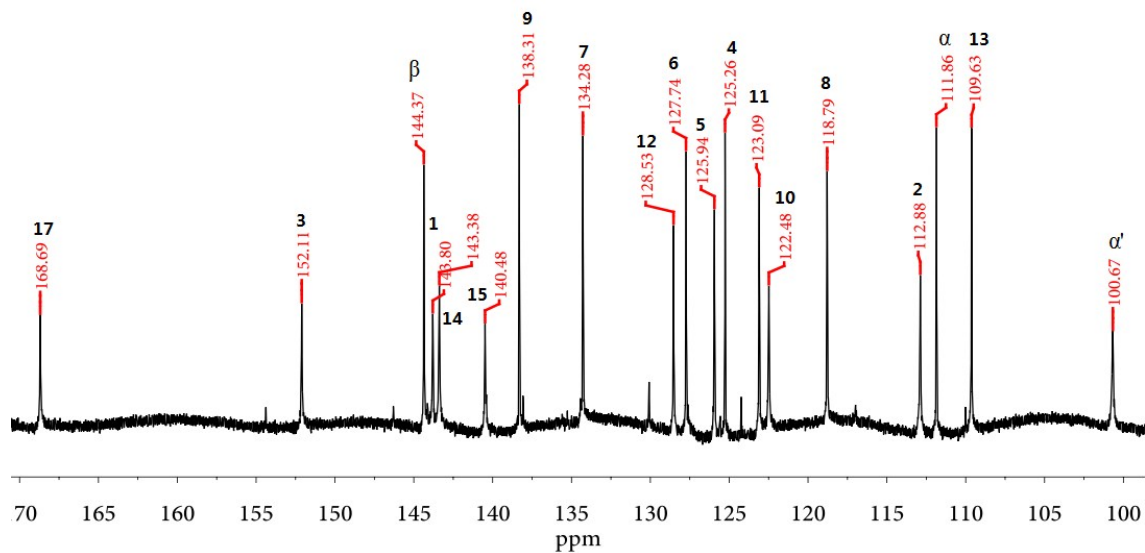
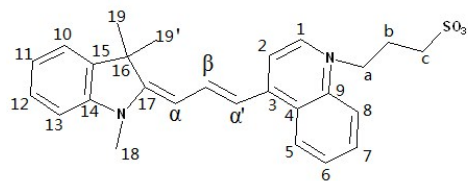


Fig. S3 The ^{13}C NMR expansion 2 of Dir.

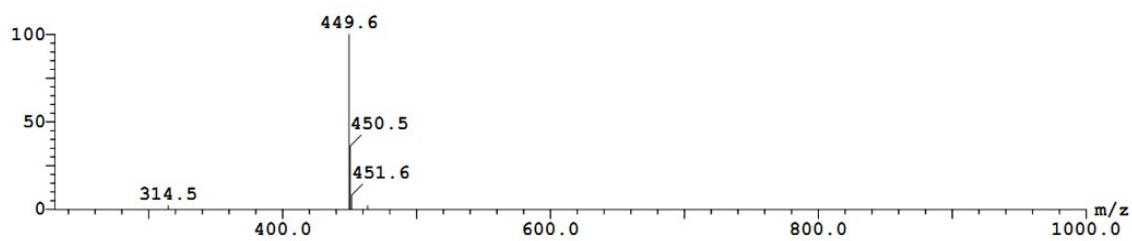


Fig. S4. The ESI-MS spectrum of Dir.

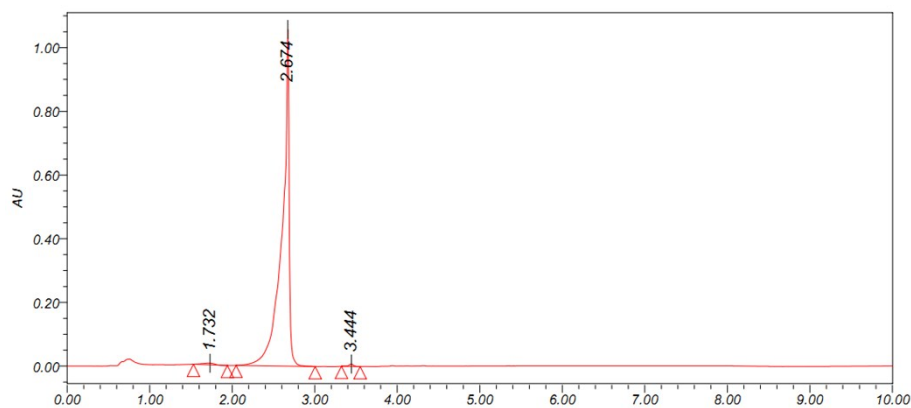


Fig. S5. The purity of Dir was determined by UPLC.

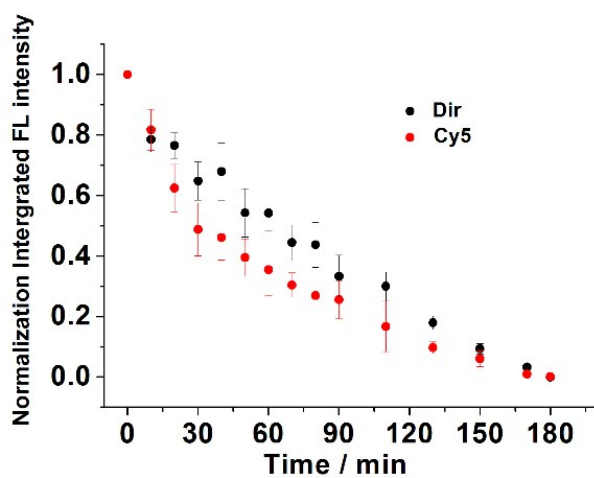


Fig. S6 Comparison on the photostability of Dir and Cy5. All samples were continuously irradiated using a 500 W xenon lamp.

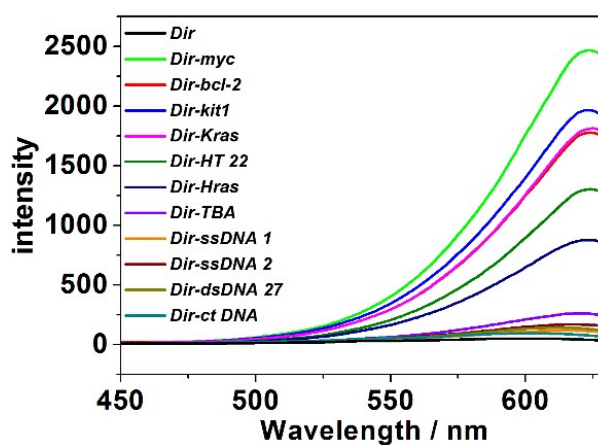


Fig. S7. The excitation spectra of Dir (0.5 μ M) alone and Dir with DNA (15 μ M).

The emission wavelength was set at 651 nm.

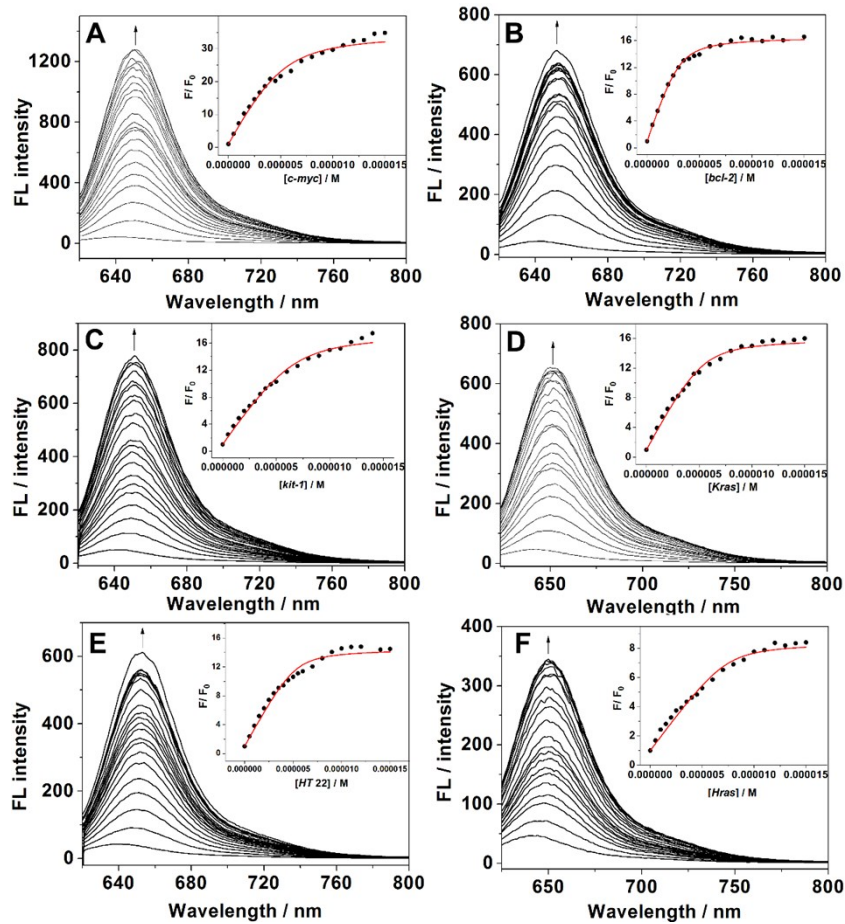


Fig. S8. Fluorescence titration assay of Dir (0.5 μM) with *c-myc* (A, 0.5–15 μM), *bcl-2* (B, 0.5–15 μM), *kit 1* (C, 0.5–15 μM), *Kras* (D, 0.5–15 μM), *HT 22* (E, 0.5–15 μM) and *Hras* (F, 0.5–15 μM) in 20 mM Tris-HCl buffer with 100 mM KCl. Each insert figures represented the determination of apparent binding equilibrium constant K_a .

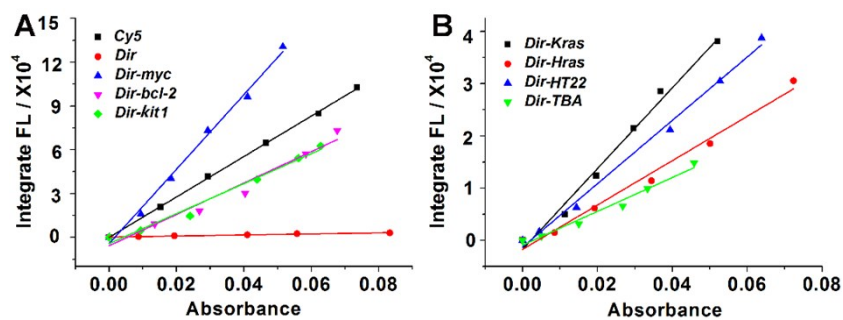


Fig. S9 Fluorescence quantum yield determination of Dir in the absence (A) and presence of G-quadruplex (A, B) in 20 mM Tris-HCl buffer with 100 mM KCl.

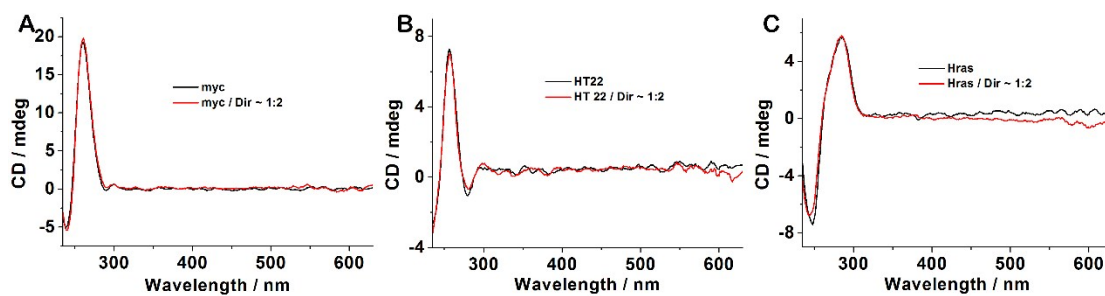


Fig. S10. CD spectra of 4 μM G-quadruplex-forming oligonucleotides *c-myc* (A), *HT22* (B) and *Hras* (C) in the absence and presence of Dir (8 μM) in 20 mM Tris-HCl buffer, pH 7.4.