Supplemental Information

A Ratiometric Two-photon Fluorescent Probe for Fluoride Ions Imaging in Living HeLa Cells and Zebrafish

Wei Hu†, Lingyu Zeng‡, Zhihong Liu†, Yanying Wang†, Xiaoxue Ye†, and Chunya Li†,*

† Key Laboratory of Analytical Chemistry of the State Ethnic Affairs Commission, College of Chemistry and Material Science, South-central University of Nationalities, Wuhan 430074, China.

‡ Key Laboratory of Analytical Chemistry for Biology and Medicine (Ministry of Education), College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, China.

* Corresponding author.

Tel: +86 27 67842752;

E-mail address: lcychem@yahoo.com
Fig. S 1 $^1$H-NMR spectrum of QF (300 MHz, $d_6$-DMSO)
Fig. S5 $^{13}$C-NMR spectrum of QF (100 MHz, $d_6$-DMSO)
Fig. S 3 HRMS (MALDI) spectrum of QF
Fig. S 4. a) The normalized absorption spectra of QF and HQB; b) The fluorescence spectra of 10 μM QF and HQB under one-photon excitation mode. All spectra were determined in a phosphate buffer (50 mM, pH 7.4, 0.9% NaCl, 25 μM CTAB).
**Fig. S 5** Cell survival rate of control groups (without QF) and experimental group (with 2, 5, 10, 20, 50, 75, and 100 µM of QF). All groups contain 2% DMSO in 100 µL DMEM).
**Fig. S 6** a) TPM images of HeLa cells labeled with 20 μM QF for 30 min and further incubated with NaF for 1 h. The color reflects the ratio of fluorescence intensity (F_{green}/F_{blue}). b) Two-photon fluorescence intensity ratio from circle A-C as a function of time. The images were collected with 30 sec intervals for the duration of 30 min under xy/t mode. Scale bar: 20 μm.
Fig. S 7 Separate images at different z-axis depth of the QF-labeled Zebrafish treated with NaF. The fluorescence intensity ratio ($F_{\text{green}}/F_{\text{blue}}$) was reflected by color. 

Scale bar: 500 μm.