

DFHO

3,5-Difluoro-4-Hydroxybenzylidene-
Imidazolone-2-Oxime
Cat. No. 500-1mg



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Product

DFHO is a non-fluorescent dye that is structurally similar to the chromophore found in red fluorescent protein (RFP). Upon binding to the Corn™ aptamer, DFHO is converted to a highly fluorescent state that can be detected at the emission wavelength of 545 nm. DFHO can also bind Broccoli™ derivative aptamers and turn on their fluorescence. DFHO is cell-permeable with negligible toxicity in living cells and can be used to label any genetically encoded Corn™ RNA tag. When bound to Corn™, DFHO has been found to be highly photostable compared to DFHBI, DFHBI-1T, and mVenus. The photostability of DFHO was demonstrated in the imaging and quantitative measurement of cellular Pol III promoter activity in living cells.

Presentation

Each vial contains lyophilized DFHO dyes. Resuspension in DMSO at 10 mM concentration is recommended before transferring to the desired experimental buffer. DFHO can also be resuspended in water [pH >7.4] at 100 μM. Once all the dyes are in solution, titrate back to neutral pH to ensure stability.

Storage

Store at -20 °C. Stable for 2 years at -20 °C from the date of shipment. Non-hazardous. No MSDS needed.

Specifications

Corn™ | Excitation maximum: 505 nm
| Emission maximum: 545 nm
| Quantum yield: 0.25

Broccoli™ | Excitation maximum: 518 nm
| Emission maximum: 582 nm
| Quantum yield: 0.34

Extinction coefficient ($M^{-1} cm^{-1}$)^a : 19,800
 K_D : 70 nM

^a Extinction coefficient of DFHO was measured in pH 7.4 buffer.

Data

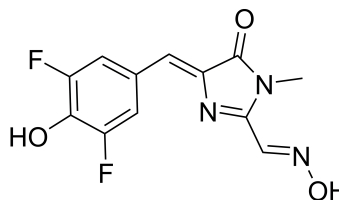


Figure 1. Structure of DFHO. MW = 281.2

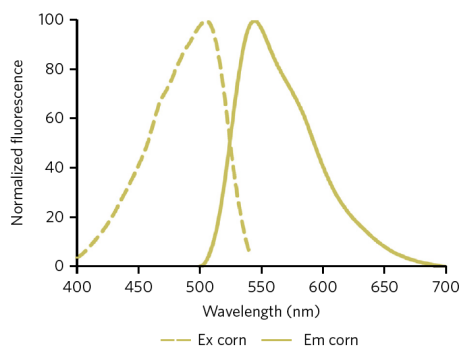


Figure 2. Excitation and emission spectra of Corn™/DFHO complex.

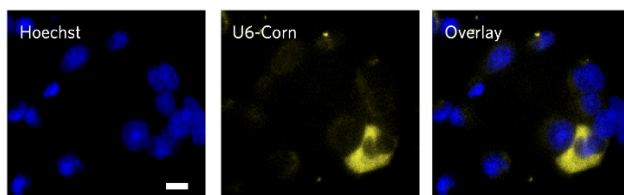


Figure 3. Live-cell imaging of HEK273T cells expressing U6-Corn™ in the presence of 10 μM DFHO. Images are Hoechst-stained nuclei (blue) and Corn™ fluorescence (yellow) acquired using DAPI and YFP filter sets.

References

Song W, et al. 2017. Imaging RNA polymerase III transcription using a photostable RNA-fluorophore complex. *Nat Chem Biol* 13(11), 1187-1194.

Warner KD, et al. 2017. A homodimer interface without base pairs in an RNA mimic of red fluorescent protein. *Nat Chem Biol* 13(11), 1195-1201.