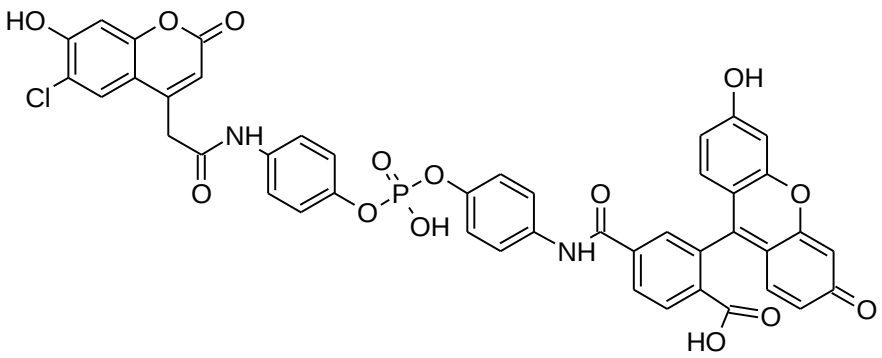
PRODUCT INFORMATION

CPF4

Cat. No. ME045.1 (250 µg)
Cat. No. ME045.2 (500 µg)

Enzyme-cleavable FRET sensor molecule for the ratiometric measurement of Phosphodiesterase activity



- Fluorescence resonance energy transfer (FRET) sensor molecule
- Quantitative ratiometric measurement of Phosphodiesterase I activity
- Effective method to monitor Phosphodiesterase activity in real time with high sensitivity
- Large spectral shift in the emission spectrum after hydrolysis of the phosphodiester linker by Phosphodiesterase I
- Tool for investigating the role of NPPs (pyrophosphatase/phosphodiesterases)

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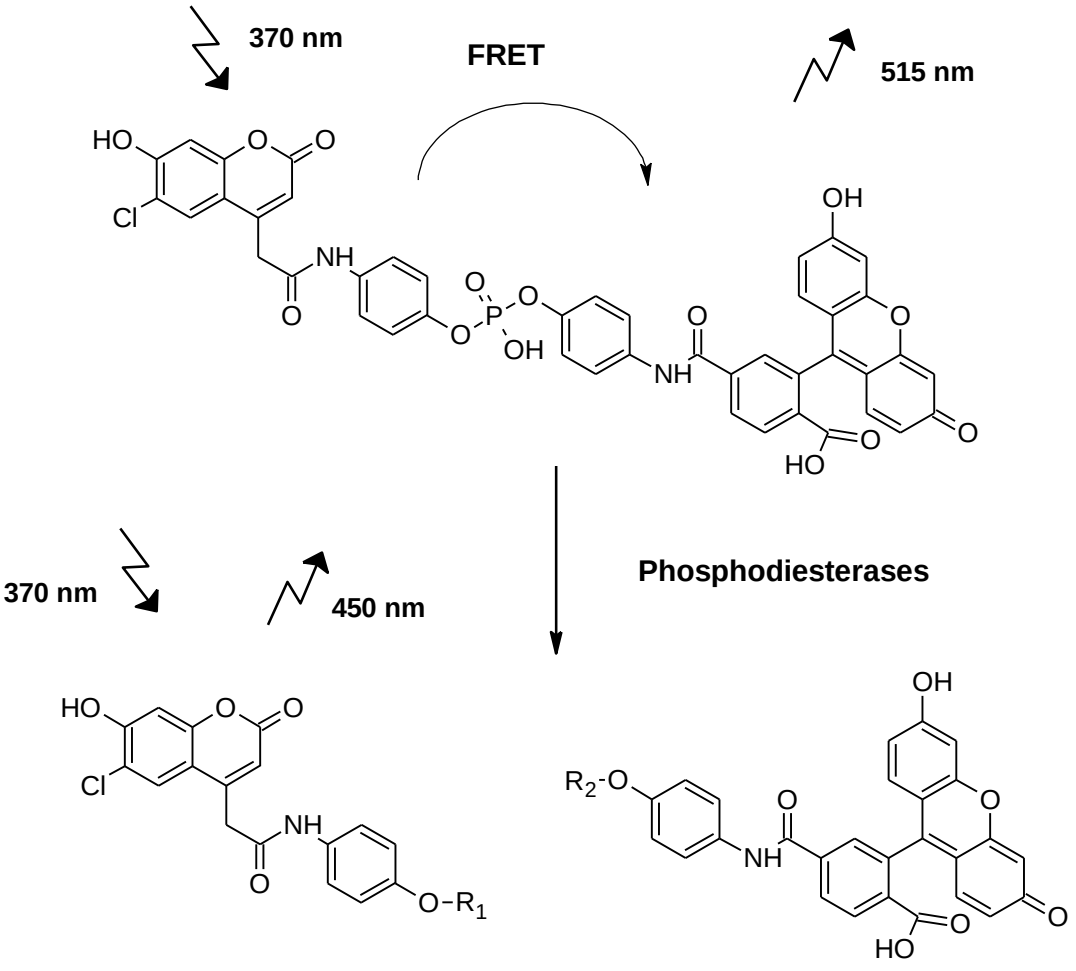
Product Data

product name:	CPF4
synonyme:	coumarin phosphodiester-linked fluorescein
molecular formula:	$C_{44}H_{28}ClN_2O_{14}P$
molecular weight:	875.12 g/mol
stability:	desiccate at +4°C, dark
appearance:	yellow solid
FRET:	coumarin donor – fluorescein acceptor
absorbance:	370 nm
emission (uncleaved):	515 nm
emission (cleaved):	450 nm
solubility:	10 mM in in DMSO (stock solution), aqueous buffers > 8.5 pH
purity:	> 99% (^{1}H-NMR, 500 MHz)

Sensor Principle



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FRET (fluorescence resonance energy transfer) is a radiationless transmission of an energy quantum between two fluorophores in close proximity. Cleaving of the chemical bond between these fluorophores, which have an overlap in their spectra, results in a large shift in the emission spectra. Addition of a Phosphodiesterase I, which catalyzes the hydrolysis of phosphodiester bonds (substrates are nucleic acids and cyclic nucleotides) to an aqueous solution of CPF4 results in an increase in the donor fluorescence and a decrease in the acceptor fluorescence. CPF4 is an effective tool to monitor the activity of phosphodiesterases in real time with high sensitivity.

References

1) Design and Synthesis of an Enzyme-Cleavable Sensor Molecule for Phosphodiesterase Activity Based on Fluorescence Resonance Energy Transfer.
   J. Am. Chem. Soc., Vol. 124, no. 8, 2002
2) Design and Synthesis of Intramolecular Resonance-Energy Transfer Probes for Use in Ratiometric Measurements in Aqueous Solution
   Angew. Chem. 2000, 112, Nr. 19

Last updated: 01/2021