

Dye Selection Guideline

Here the most important aspects to consider when you select a fluorescent dye:

- **Excitation and emission max.** the dye should match your instruments, setting such as laser and filter setting.
- **Extinction coefficient**
- The extinction coefficient is a measure how many photons can be absorbed. The extinction coefficient at the excitation wavelength should be as high as possible.
- **Quantum yield**
- The quantum yield should be as high as possible. This is the ratio of absorbed photons over emitted photons. The product of the extinction coefficient and the quantum yield is the brightness.
- **Water solubility:** water soluble dyes are mainly for antibody conjugation; hydrophobic acid dyes are mainly for cell stain or nucleic acid labeling application.
- **Stokes shift:** The difference in the maximum wavelength peaks between the emission and excitation spectra, measured in nanometers. Be cautious with bleed through in other color channels when you work with multiple fluorescent probes, especially when you quantify co-localization. Test all fluorescent probes separate to evaluate the bleed through.
- **Background:** mostly caused by unspecific binding in bioassay,
- **Photostability:** The fluorescent dye should be photostable.
- **Photochromic behavior.** For STORM experiment, you want a blinking fluorophore. However, for a molecule tracking experiment you absolutely do not want a blinking fluorophore.
- **Fluorescence decay time (τ):** The time interval after which the number of excited fluorophore molecules decreases to 1/e (approx. 37%), usually measured in nanoseconds.
- **Live/dead cell permeability**
- **Reactive group**

BroadPharm's fluorescence dye library consists of broad selection of fluorescent dye reagents to meet the need of your advanced research. The variability of these reagents substantially expands the range of applications for biology and chemistry

- Varieties of functional group reagents of dye differ in NHS, maleimide, TCO, Tz, DBCO, Azide, hydrazine
- Varieties dye containing SO_3Na and different length of PEG linker to increase water solubility and reduce the background in the bioassay.
- Varieties dye can have cell permeability
- Dye wavelength range from 350nm to 800nm