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Ethidium homodimer 1, red fluorescent nucleic acid stain

http://www.lumiprobe.com/p/ethidium-homodimer-1

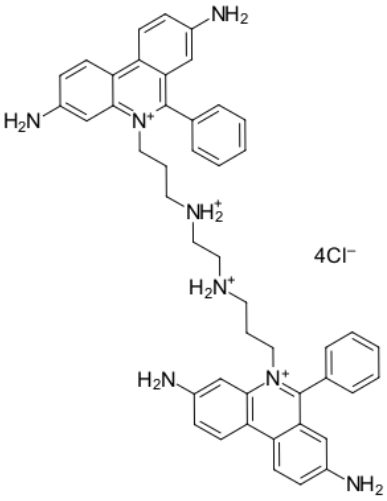
Ethidium Homodimer 1 (EthD-1) is a high-affinity, red fluorescent nucleic acid dye impermeant to live cells and widely used to identify dead cells in biological research.

EthD-1 is a dimeric analog of ethidium bromide, consisting of two ethidium moieties linked by a rigid bridge. Due to its large size and charged (dicationic) structure, EthD-1 cannot enter living cells with healthy membranes. In cells with compromised membrane integrity (dead or late-stage apoptotic cells), EthD-1 passively enters the cytoplasm and nucleus, where it intercalates into double-stranded nucleic acids (DNA and RNA) and exhibits a massive fluorescence enhancement (>40-fold) upon binding.

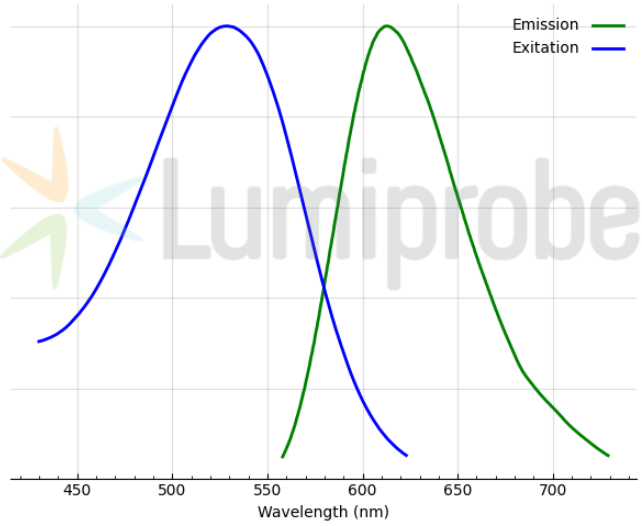
The EthD-1 red emission is easily distinguishable from green fluorescent probes (e.g., GFP, FITC, Calcein, LUCS® 9, LUCS® 13), blue Hoechst stains, and far-red dyes (LDS 751, LUCS® 5), enabling easy multiplexing.

EthD-1 is a standard dead-cell indicator in the viability and cytotoxicity assays, most commonly paired with green fluorescent live-cell stain like Calcein AM, LUCS® 9, or LUCS® 13. It is also used as a counterstain in fluorescence microscopy.

Note that, while highly specific for dead cells in short-term assays, prolonged exposure can lead to its uptake by live cells, as it is mildly cytotoxic and can eventually permeabilize membranes.



Structure of EthD-1



Excitation and emission spectra of dsDNA complex with Ethidium homodimer 1

General properties

Appearance:	dark red-violet solid
Molecular weight:	856.77
CAS number:	61926-22-5
Molecular formula:	$C_{46}H_{50}Cl_4N_8$
Solubility:	methanol, water, DMSO
Quality control:	NMR ^{1}H and HPLC-MS (90+%)
Storage conditions:	24 months after receival at -20°C in the dark. Transportation: at room temperature for up to 3 weeks. Desiccate.
Legal statement:	This Product is offered and sold for research purposes only. It has not been tested for safety and efficacy in food, drug, medical device, cosmetic, commercial or any other use. Supply does not express or imply authorization to use for any other purpose, including, without limitation, in vitro diagnostic purposes, in the manufacture of food or pharmaceutical products, in medical devices or in cosmetic products.

Spectral properties

Excitation/absorption maximum, nm:	529
Emission maximum, nm:	613