

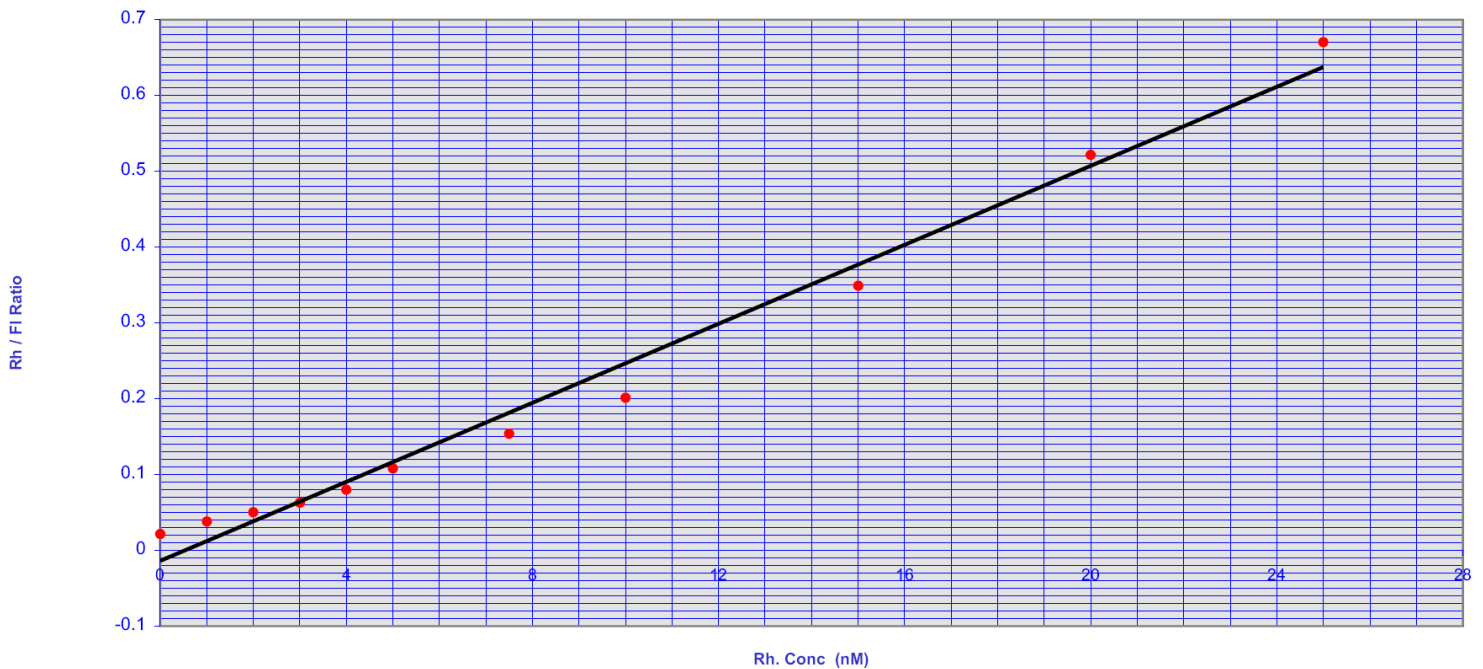
PTI Technical Note

Microplate Reader for FRET

Developed in the late 1940s, FRET has been used to measure binding constants and enzyme activity for many years. The emerging of FRET-based DNA applications has greatly increased its popularity in the field of biology in recent years. FRET occurs when the emission band of one molecule overlaps with an excitation band of a second molecule, and when the two chromophores are located within 20-80Å of each other. Upon excitation of the fluorophore that absorbs at the higher energy (the FRET donor), quenching of its emission occurs by the FRET acceptor (dye or no dye). The detection of FRET implies that the two-fluorophore molecules are physically within a few nanometers. FRET disruption indicates that the relative position of the molecules has changed and the new distance between them is too large for FRET to occur. The high sensitivity, rapid and noninvasive nature of FRET makes it an ideal approach for researchers of all fields as well as clinicians to screen large amount of samples.

FluoDia T70 was originally designed for FRET based DNA and RNA hybridization assay. With its high sensitivity, accurate high temperature control and its dual channel detection capability, *FluoDia T70 is the ideal microplate reader for FRET analysis.*

Using the FluoDia T70 to measure FRET between Fluorescein and Rhodamine



Selected FRET Applications for FluoDia T70:

DNA/RNA based

- DNA mutation detection/ SNP genotyping
 - Non-PCR based: Invader assay;
 - PCR based: Molecular beacon; TaqMan genotyping, scorpion primers.
- Structure and conformation of nucleic acids
- DNA cleavage, ligation, recombination detections
- mRNA invader assay, RNA synthesis monitoring

Protein Based

- Enzyme activities
 - Protease
 - Protein Kinase
 - Caspase activity
 - Rnase
- Structure and conformation of proteins
- Spatial distribution and assembly of protein complexes
- Immunoassays

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Selected FRET Applications for FluoDia T70:

Lipid/membrane

- Distribution and transport of lipids
- Membrane potential sensing
- Membrane fusion assays

Molecular Interaction based

- Protein-Protein interaction
- Molecular dimerization
- Receptor proximity
- Receptor/ligand interactions
- Interactions of single molecules

Others

- Development of biosensors
 - DNA-based biosensors
 - deoxyribozyme-based biosensors
- Screening catalysts for reaction



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