

2015-2016

World First
Cellular Temperature Monitoring Tool

Thermoprobe

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"Thermoprobe" is a fluorescent polymeric thermometer for living cells.

Thermoprobe is cell-permeable and indicates intracellular temperature distribution by fluorescence microscopy. It can be delivered into cells without microinjection. Intracellular temperature distribution reflects thermodynamics and function of the intracellular molecules.

Some papers report upregulation of heat production in disease state cells such as tumor cells. It is expected that "Thermoprobe" contributes to the development of new therapy by understanding cell function through intracellular temperature distribution.

[Manufacturer: FNA]

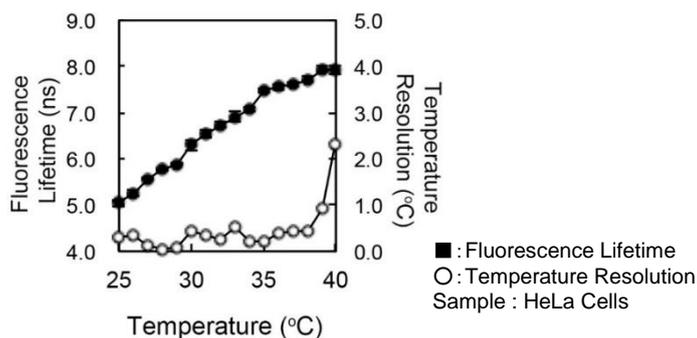
Type of Probes	FLIM-type Cellular Thermoprobe for Fluorescence Lifetime	Ratio-type Cellular Thermoprobe for Fluorescence Ratio
Principle	<p>Weak Fluorescent → Strong Fluorescent</p> <p>Heating Cooling</p>	<p>Thermoprobe is composed of Thermo Sensitive Unit (NNPAM), Cationic Unit (APTMA), and Fluorescence Unit (DBThD-AA). Under low temperature conditions, due to existence of water molecules inside of structure, fluorescent is weak. At high temperature, water molecules are excluded and gives strong fluorescence.</p> <p> — Thermo Sensitive Unit \oplus Cationic Unit ★ ★ Fluorescent Unit H_2O Water Molecule </p>
Structure of Probes	<p>Thermosensitive unit (NNPAM unit) Cation unit (APTMA unit) Fluorescent unit (DBTh-AA unit)</p>	<p>Thermo-sensitive unit (NNPAM unit) Cation unit (APTMA unit) Fluorescent unit (DBTh-AA unit) Fluorescent unit (BODIPY-AA unit)</p>
Average Molecular Weight	12,300	20,300
Measuring Wavelength	Ex. 405 nm / Em. 560 - 610 nm	Ex. 458 nm / Em. 490 - 530 nm or 570 - 610 nm
Delivery Method	Add Thermoprobe (in 5 % glucose solution) to cells	
Applicable Cells	Adherent Cells, Suspension Cells	
Detection Temperature	28°C to 38°C	28°C to 44°C
Detection Sensitivity	0.05 - 0.54°C	0.01 - 0.25°C
Detection System	Fluorescence Microscopy with Fluorescent Life Time Imaging System	Fluorescence Microscopy
Product Code	#FDV-0004	#FDV-0005
Unit Size / Storage	200 µg / Room Temperature	200 µg / Room Temperature
	#FDV-0004	#FDV-0005
	3 × 200 µg / Room Temperature	3 × 200 µg / Room Temperature

FLIM-type

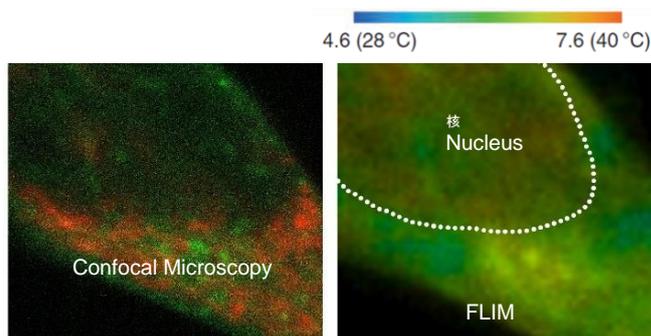
Cellular Thermoprobe for Fluorescence *Lifetime*

For more information : http://www.funakoshi.co.jp/exports_contents/80404

None of the local concentration of Cellular Thermoprobe, excitation strength, fluorescence fade, or excitation wavelength do not affect temperature measurement.



Temperature-dependent change in the fluorescence lifetime of the Cellular Thermoprobe for Fluorescence Lifetime and the temperature resolution in HeLa cell extracts.

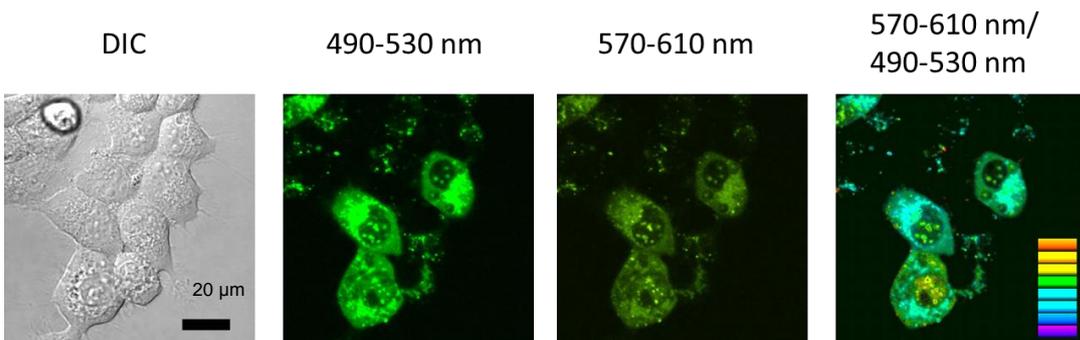


Confocal fluorescence images
Green: Cellular Thermoprobe for Fluorescence Lifetime
Red: Mitochondria
Fluorescence lifetime images

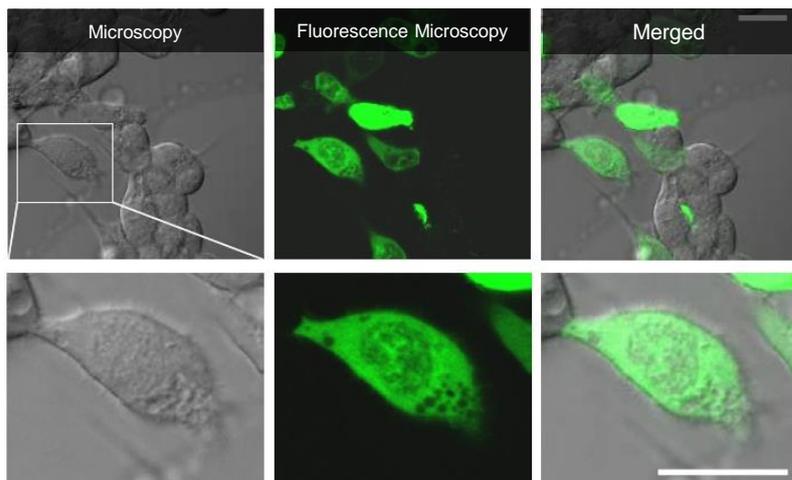
Ratio-type

Cellular Thermoprobe for Fluorescence *Ratio*

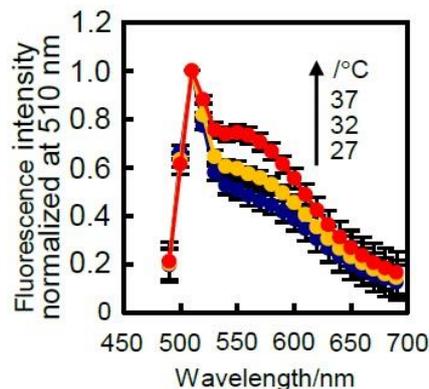
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HEK293T Cells introduced Cellular Thermoprobe for Fluorescence Ratio.



Probe Introduction for HEK293T Cells



Fluorescent Spectrum by each temperature

Red: 37°C Yellow: 32°C Blue: 27°C

NOTE
 * All products here are research use only, not for diagnostic use.
 * Specs might be changed for improvement without notice.

* Company name and product name are trademark or registered mark.
 * Please contact your local distributors for orders, quote request and inquiry.

Your Local Distributor

funakoshi Co., Ltd.

Address: 9-7 Hongo 2-Chome, Bunkyo-ku,
 Tokyo 113-0033 JAPAN
 Phone : +81-3-5684-6296
 Fax : +81-3-5684-6297
 Email : export@funakoshi.co.jp