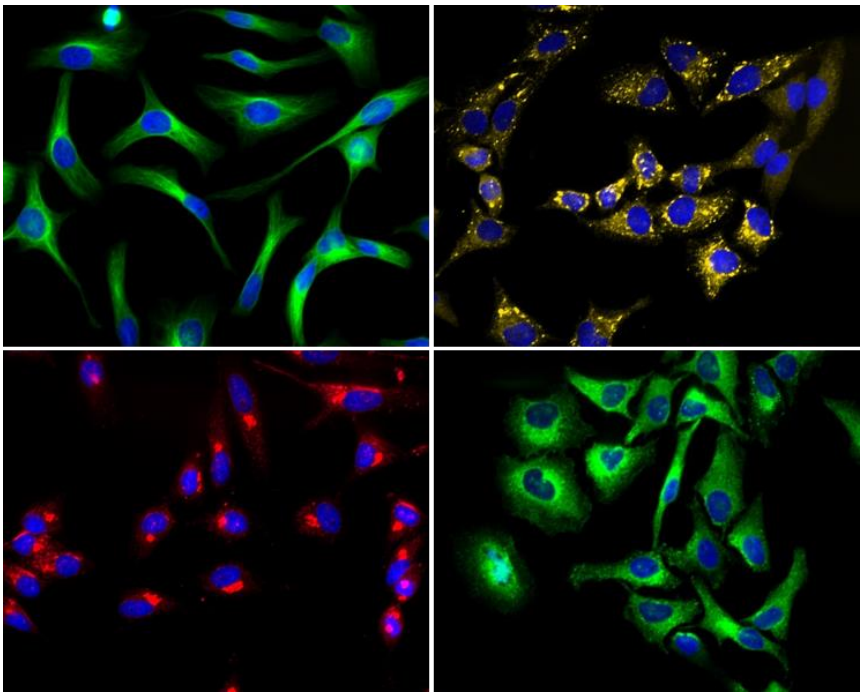
Product Information

BioActs

CELL IMAGING PROBES

Intracellular probes and Organelle probes for imaging



Imaging probe product

Product function	Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size
Apoptosis Detection	XTN1101	FITC TUNEL assay kit	Green	495	522	Fixed cell	50 assay, 100assay
	XTN1401	Flamma®488 TUNEL assay kit	Green	496	519	Fixed cell	50 assay, 100assay
	XTN1201	Flamma®552 TUNEL assay kit	Yellow	550	565	Fixed cell	50 assay, 100assay
	XTN1301	Flamma®648 TUNEL assay kit	Red	648	665	Fixed cell	50 assay, 100assay
Apoptosis Detection (*In vitro, In vivo*)	AHW1025	ApoFlamma® H FAM	Green	492	519	Live cell	25 or 100 assay
	AHH1001	ApoFlamma® H TAMRA	Orange	543	575	Live cell	25 or 100 assay
	AHW1011	ApoFlamma® H 552	Yellow	550	565	Live cell	25 or 100 assay
	AHW1215	ApoFlamma® H 648	Red	648	663	Live cell	25 or 100 assay
	APW1025	ApoFlamma® PS FAM	Green	492	519	Live cell	25 or 100 assay
	APP1001	ApoFlamma® PS TAMRA	Orange	543	575	Live cell	25 or 100 assay
	APW1011	ApoFlamma® PS 552	Yellow	550	565	Live cell	25 or 100 assay
	APW1215	ApoFlamma® PS 648	Red	648	663	Live cell	25 or 100 assay
Apoptosis Detection *(In vitro)*	XAP1101	Annexin-V FITC Apoptosis detection Kit	Green	495	522	Live cell	50 assay, 250 assay
	XAP1201	Annexin-V Flamma® 488 Apoptosis detection Kit	Green	494	519	Live cell	50 assay, 250 assay
	XAP1301	Annexin-V Flamma® 552 Apoptosis detection Kit	Yellow	550	565	Live cell	50 assay, 250 assay
	XAP1401	Annexin-V Flamma® 648 Apoptosis detection Kit	Red	648	665	Live cell	50 assay, 250 assay
Plasma membrane staining	RCS1211	CytoFlamma® 496 Cell membrane	Green	495	522	Fixed/Live	1mL
	RCS1311	CytoFlamma® 552 Cell membrane	Yellow	551	570	Fixed/Live	1mL
	RCS1411	CytoFlamma® 648 Cell membrane	Red	648	672	Fixed/Live	1mL
	RCS1511	CytoFlamma® 675 Cell membrane	Far red	675	698	Fixed/Live	1mL
	RCS1113	CytoFlamma® 488 WGA	Green	496	519	Fixed/Live	2mg, 5mg
	RCS1313	CytoFlamma® 552 WGA	Yellow	551	570	Fixed/Live	2mg, 5mg
	RCS1913	CytoFlamma® 594 WGA	Yellow	591	617	Fixed/Live	2mg, 5mg
	RCS1413	CytoFlamma® 648 WGA	Red	648	672	Fixed/Live	2mg, 5mg
ROS detection	SSH0001	NpFlamma® ROS 380	Blue	380	450		1mg
Cell Imaging	PNC1201	NpFlamma® HGC 648	Red	648	675		10 doses, 50 doses, 250 doses
	PNC1401	NpFlamma® HGC 675	Far red	675	698		10 doses, 50 doses, 250 doses
	PNM0103	NpFlamma® 648 MMP-2, 9	Red	648	663		10 doses, 50 doses, 250 doses
	PNM0104	NpFlamma® 675 MMP-2, 9	Far red	675	691		10 doses, 50 doses, 250 doses
Imaging or tracking	RSC0201	Dextran (3K), FAM	Green	492	519		5mg
	RSC0202	Dextran (3K), Flamma® 488	Green	495	519		5mg
	RSC0205	Dextran (3K), Flamma® 552	Yellow	550	565		5mg
	RSC0207	Dextran (3K), Flamma® TAMRA	Orange	543	575		5mg
	RSC0208	Dextran (3K), Flamma® 560	Orange	560	589		5mg
	RSC0211	Dextran (3K), Flamma® 648	Red	648	663		5mg
	RSC0212	Dextran (3K), Flamma® 675	Far red	675	691		5mg
	RSC0301	Dextran (10K), FAM	Green	492	519		5mg
	RSC0302	Dextran (10K), Flamma® 488	Green	495	519		5mg
	RSC0305	Dextran (10K), Flamma® 552	Yellow	550	565		5mg
	RSC0307	Dextran (10K), Flamma® TAMRA	Orange	543	575		5mg
	RSC0308	Dextran (10K), Flamma® 560	Orange	560	589		5mg
	RSC0311	Dextran (10K), Flamma® 648	Red	648	663		5mg
	RSC0312	Dextran (10K), Flamma® 675	Far red	675	691		5mg
Imaging or	RSC0101	BSA, FAM	Green	492	519		5mg
	RSC0102	BSA, Flamma® 488	Green	495	519		5mg

tracking	RSC0105	BSA, Flamma® 552	Yellow	550	565	5mg
	RSC0107	BSA, Flamma® TAMRA	Orange	543	575	5mg
	RSC0108	BSA, Flamma® 560	Orange	560	589	5mg
	RSC0111	BSA, Flamma® 648	Red	648	663	5mg
	RSC0112	BSA, Flamma® 675	Far red	675	691	5mg

Organelle target product

Product function	Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size
Detection of Tubulin	RCS1112	CytoFlamma® 488 Tubulin	Green	496	519	fixed cell	0.5mL
	RCS1312	CytoFlamma® 552 Tubulin	Yellow	551	570	fixed cell	0.5mL
	RCS1912	CytoFlamma® 594 Tubulin	Yellow	591	617	fixed cell	0.5mL
	RCS1412	CytoFlamma® 648 Tubulin	Red	648	672	fixed cell	0.5mL
	RCS1512	CytoFlamma® 675 Tubulin	Far red	675	698	fixed cell	0.5mL
Detection of Mitochondria	RMS1101	MitoFlamma™ Green	Green	508	580	Live cell	1mg, 20x50ug

Primary antibody for immunofluorescence Imaging

Cat. No.	Product name	Host	Species reactivity	Available for	Size
RPA5414	Alpha tubulin antibody (Tubulin)	Mouse	Human, Mouse, Rat	FACS, ICC, IF, IHC, IP, WB	100ul
RPA4111	Cox4 antibody (Mitochondria)	Rabbit	Human, Rat	FACS, ICC, IF, IHC, IP, WB	100ul
RPA4313	LC3B Antibody (Autophagosome)	Rabbit	Human, Rat, Mouse	FACS, ICC, IF, IHC, IP, WB	100ul
RPA5212	Golgin-97 Antibody (Golgi)	Mouse	Human	FACS, ICC, IF, IHC, IP, WB	100ug

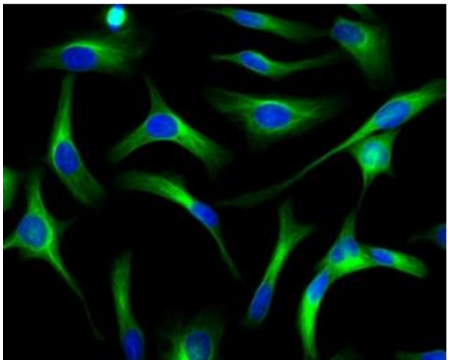
Secondary antibody for immunofluorescence Imaging

Host	Target	Conjugates	Cat. No.	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Application	Size
Goat	anti-Mouse IgG	Flamma® 488	RSA1141	Green	495	519	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 552	RSA1151	Yellow	550	565	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 594	RSA1191	Red	590	617	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 648	RSA1161	Red	648	665	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		HRP	RSA1122	-	-	-	ICC, IP, ELISA, IHC, WB	0.5mg, 1mg, 2mg
	anti-Rabbit IgG	Flamma® 488	RSA1241	Green	494	523	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 552	RSA1251	Yellow	550	565	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 594	RSA1291	Red	560	589	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 648	RSA1261	Red	648	665	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		HRP	RSA1221	-	-	-	ICC, IP, ELISA, IHC, WB	0.5mg, 1mg, 2mg
	anti-Rat IgG	Flamma® 488	RSA1541	Green	495	519	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 552	RSA1551	Yellow	550	565	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 594	RSA1591	Red	590	617	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 648	RSA1561	Red	648	665	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		HRP	RSA1521	-	-	-	ICC, IP, ELISA, IHC, WB	0.5mg, 1mg, 2mg
Rabbit	anti-Goat IgG	Flamma® 488	RSA4441	Green	495	519	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 552	RSA4451	Yellow	550	565	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 594	RSA4491	Red	590	617	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 648	RSA4461	Red	648	665	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		HRP	RSA4421	-	-	-	ICC, IP, ELISA, IHC, WB	0.5mg, 1mg, 2mg

Imaging with organelle target reagents

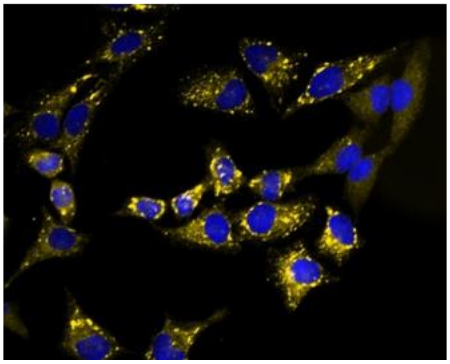
BioActs supplies bright and good photostability fluorescence dye Flamma® series or secondary antibodies combined with HRP (horseradish peroxidase) and various antibodies and probe to imaging organelle.

Tubulin



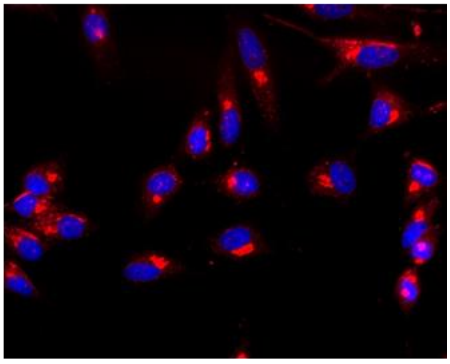
Cat. No.	Product name	Host
RPA5414	Alpha tubulin antibody	Mouse

Mitochondria



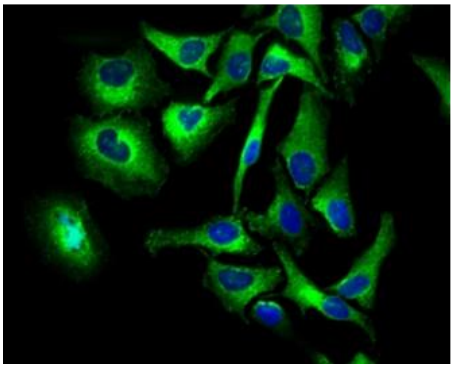
Cat. No.	Product name	Host
RPA4111	COX4 antibody	Rabbit
RMS1101	MitoFlamma™ Green	

Golgi body



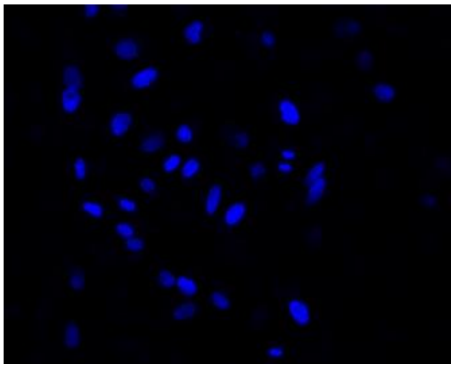
Cat. No.	Product name	Host
RPA5212	Golgin-97 antibody	Mouse

Autophagosome



Cat. No.	Product name	Host
RPA4313	LC3B antibody	Rabbit

Nucleus



Cat. No.	Product name	Host
	Prearing to release	

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Cell Imaging probes

1. TUNEL assay Kit

Flamma® Fluors TUNEL assay kit can specifically detect apoptotic cell in the cell aggregates and measure its amount. Flamma® Fluorometric TUNEL assay detects DNA schizolysis that is a biochemical feature commonly occurring in the process of apoptosis regardless of the kind of cell. This product, at simple non-radioactive test, detects apoptotic cell death from adherent cells and suspension cells at the single cell level exactly and quickly.

In addition, it can be applied to analysis of apoptotic cell of paraffin-embedded tissue sections as well as cultured cells.

Kit Component

- 5x Reaction Buffer
- Flamma® Fluors – dUTP mixture
- Terminal Deoxynucleotidyl Transferase Recombinant (30Units/ μL)
- 20x Rinse Buffer
- Plastic coverslips

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size
XTN1101	FITC TUNEL assay kit	Green	495	522	Fixed cell application	50 assay, 100assay
XTN1401	Flamma®488 TUNEL assay kit	Green	496	519	Fixed cell application	50 assay, 100assay
XTN1201	Flamma®552 TUNEL assay kit	Yellow	550	565	Fixed cell application	50 assay, 100assay
XTN1301	Flamma®648 TUNEL assay kit	Red	648	665	Fixed cell application	50 assay, 100assay

Citation & Reference

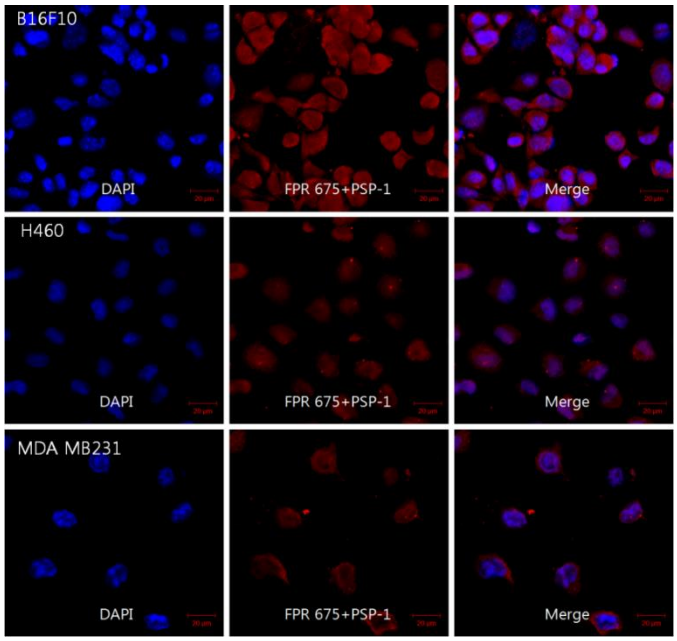
1. Arsenic Trioxide Selectively Induces Acute Promyelocytic Leukemia Cell Apoptosis Via a Hydrogen Peroxide-Dependent Pathway. 1999. Yongkui Jing, Jie Dai, Ruth M.E. Chalmers-Redman, Willam G. Tatton and Samuel Waxman. *Blood*. 94, 2102-2111.
2. Activation of a PGC-1-related coactivator (PRC)-dependent inflammatory stress program linked to apoptosis and premature senescence. 2013. Gleyzer N, Scarpulla RC. .*J Biol Chem*. 288, 8004-8015.
3. A 43 kD protein from the leaves of the herb Cajanus indicus L. modulates doxorubicin induced nephrotoxicity via MAPKs and both mitochondria dependent and independent pathways. 2012. Pal S, Sil PC. *Biochimie*. 94. 1356-1367.

2. ApoFlamma® series

ApoFlamma® series are fluorescence probes to detect Apoptotic cell. There are ApoFlamma® series ApoFlamma® PS series combines specifically to Phosphatidylserine (PS) exposed to cell-surface receptor of dead cell and ApoFlamma® H series combines specifically to histone 1 discharged to outside by apoptosis. Both product group can be used for in vitro/in vivo application and especially product lines in the NIR fluorescence can be used freely from auto fluorescence.

ApoFlamma® PS series

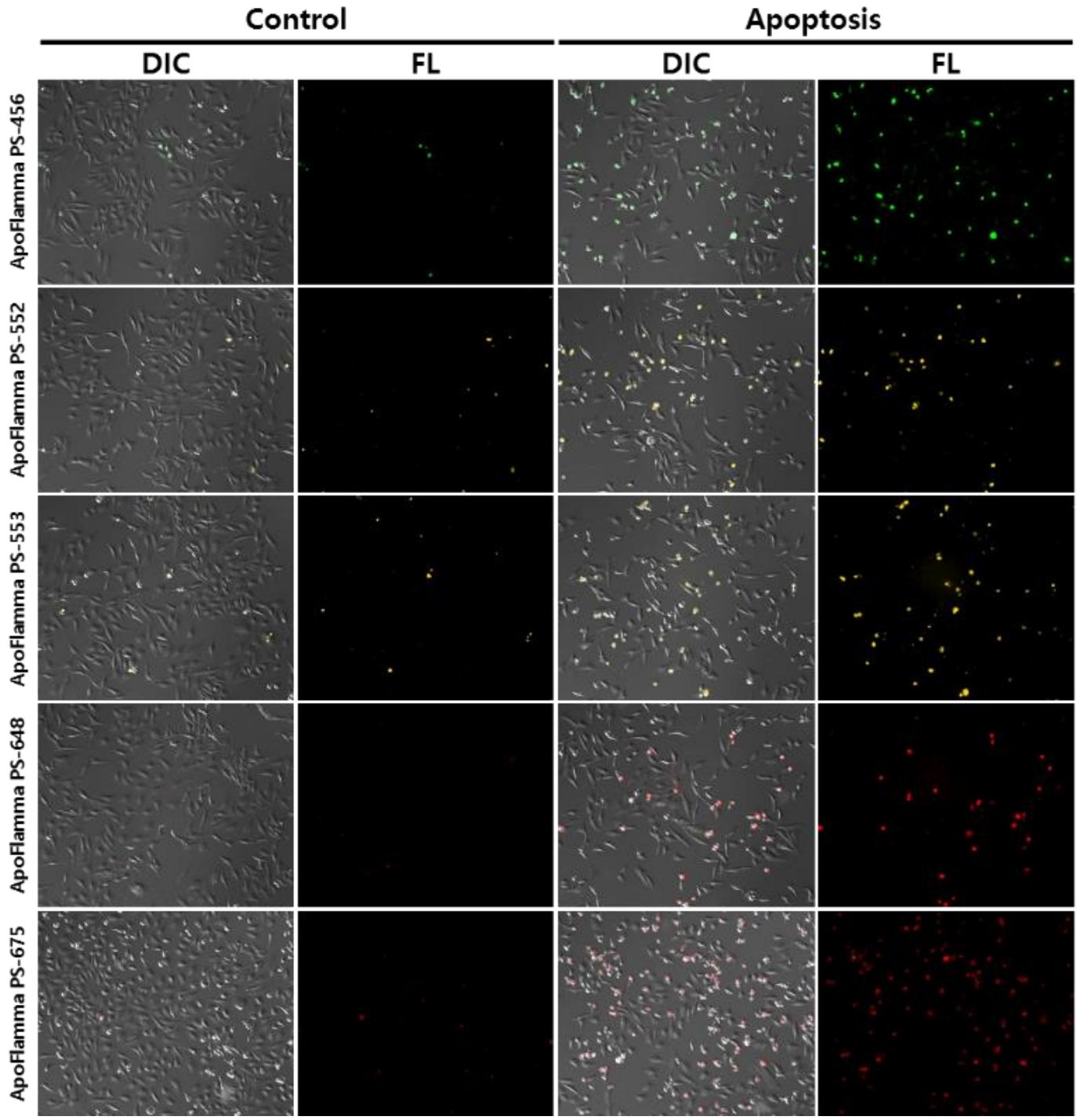
As early stage of apoptosis, phosphatidylserine (PS) which is cell membrane phospholipid, is exposed to outside of cell by moving from inside of cell membrane to outside. Dead cell can be detected by combining specific peptide sequence and excellent BioAct's FAM (fluorescein) fluorescence dye. By using ApoFlamma® H and PS Series products can check cell where apoptosis had occurred with simple staining process using Fluorescence microscope or Flow cytometry.



[Figure.1] Microscope observation of ApoFlamma® PS series for dead cell

This is fluorescence imaging of various cells (B16F10, H460, MDA-MB-231) at which apoptosis was induced by treating etoposide and result of each cell stained with FRP 675+PSP-1 (product name: ApoFlamma® PS 675).

Confirmed apoptosis occurred cell through imaging.

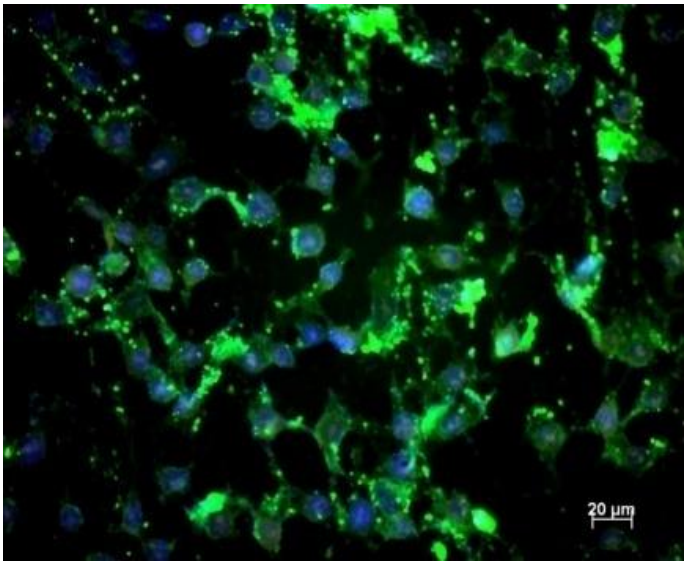


[Figure.2] Image observation for inside of ApoFlamma® PS series cell

This is result of treating each ApoFlamma® PS series after treating HeLa cell 6hr with Actinomycin D (Act D) 1uM. Imaging is not made for cell which apoptosis was not induced but can confirm PS was marked on apoptosis induced cell through imaging.

ApoFlamma® H series

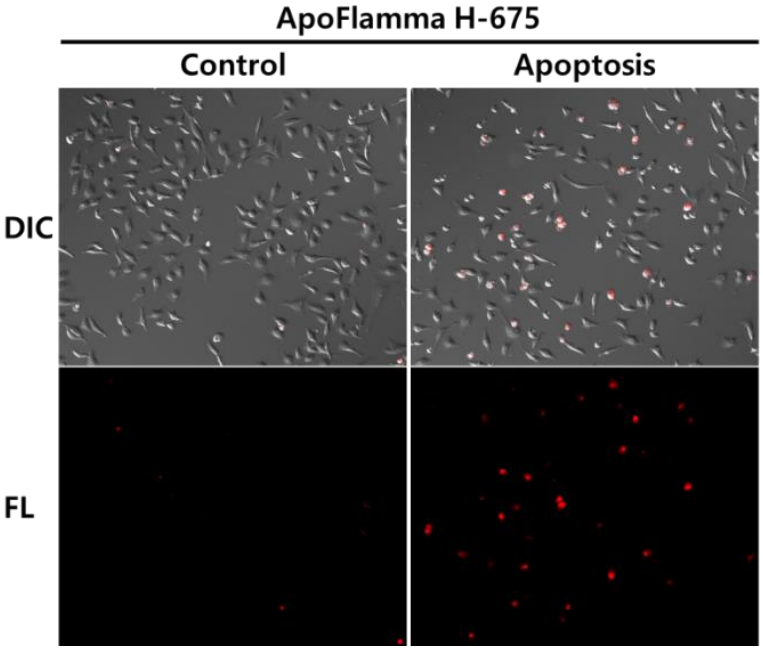
One of apoptosis sign is exposing phenomenon of histone H1 to surface of cell membrane which was combined with DNA in the nucleus. ApoFlamma® H series can detect sensitively histone H1 which is on the surface of cell membrane in the apoptosis. This product is probe product combined Apopep-1 (Apoptosis-targeting Peptide-1) and BioAct's excellent Flamma® Fluors fluorescence dye. Also this product can classify apoptosis and necrosis according to stained location by entering into nucleus and adhering with histone 1. ApoFlamma® H and PS Series products provide necessary reagent to identify apoptosis occurred cell with simple staining process with Fluorescence microscope or Flow cytometry method and analysis.



[Figure.3] ApoFlamma® H (green) cell imaging
Result obtained by treating ApoFlamma® H FAM after treating H460 cell with Etoposide 50 uM to induce apoptosis. Can confirm marking around nuclear envelop of cell through image.

[Figure.4] ApoFlamma® H 675 microscope imaging

Result obtained from treating ApoFlamma® H 675 after treating HeLa cell 6hr with Actinomycin D 1uM. Imaging was not made to cell at which apoptosis was not induced but can confirm marking around nuclear envelop of apoptosis induced cell and can confirm auto fluorescence was not affected by advantages of NIR wavelength.



Key Features

- Using at various platform (Histology, Cell, FACS)
- Noncompetitive combination with Annexin V
- Do not depend on calcium

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size	Target
APW1025	ApoFlamma® PS FAM	Green	492	519	Live cell application	25 or 100 assay	Phosphatidylserine
APP1001	ApoFlamma® PS TAMRA	Orange	543	575	Live cell application	25 or 100 assay	Phosphatidylserine
APW1011	ApoFlamma® PS 552	Yellow	550	565	Live cell application	25 or 100 assay	Phosphatidylserine
APW1215	ApoFlamma® PS 648	Red	648	663	Live cell application	25 or 100 assay	Phosphatidylserine
APW1501	ApoFlamma® PS 675	Far red	675	698	Live cell application	25 or 100 assay	Phosphatidylserine
AHW1025	ApoFlamma® H FAM	Green	492	519	Live cell application	25 or 100 assay	Histone-1
AHH1001	ApoFlamma® H TAMRA	Orange	543	575	Live cell application	25 or 100 assay	Histone-1
AHW1011	ApoFlamma® H 552	Yellow	550	565	Live cell application	25 or 100 assay	Histone-1
AHW1215	ApoFlamma® H 648	Red	648	663	Live cell application	25 or 100 assay	Histone-1
AHW1501	ApoFlamma® H 675	Far red	675	698	Live cell application	25 or 100 assay	Histone-1

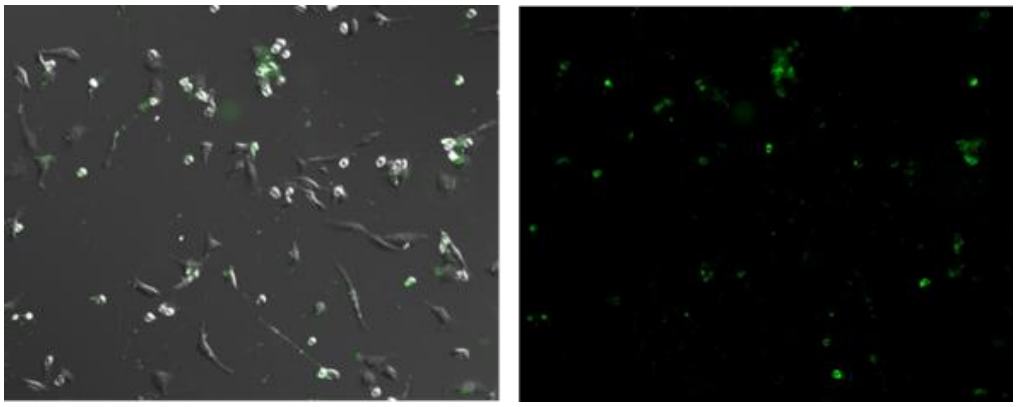
Citation & Reference

1. An apoptosis-homing peptide-conjugated low molecular weight heparin-taurocholate conjugate with antitumor properties. Bae SM. *Biomaterials* 34 (2013) 2077-2086.
2. Polyproline-type helical-structured low-molecular weight heparin (LMWH)-taurocholate conjugate as a new angiogenesis inhibitor. Lee E, *Int J Cancer* 2009;15:2755-65.

Cell imaging probes

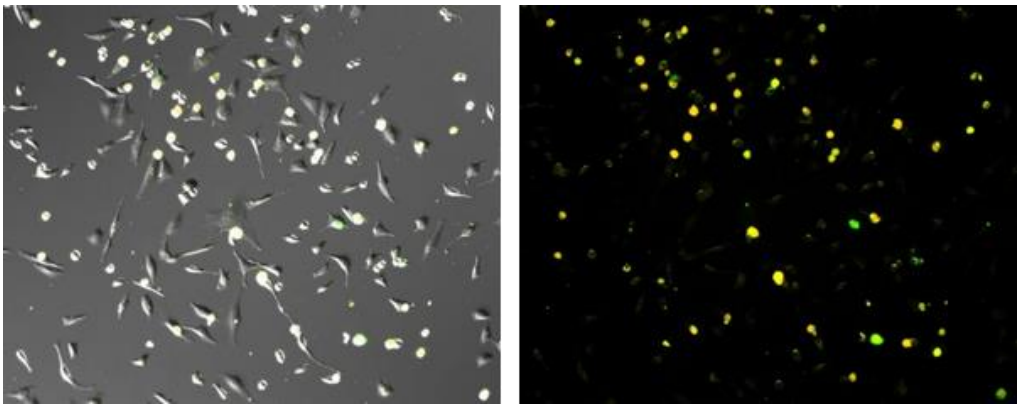
3. Annexin V® series

As oncoming sign of apoptosis, phosphatidylserine (PS) which is cell membrane phospholipid, is exposed to surface of cell by moving from inside of cell membrane to outside. Annexin V is calcium dependent phospholipid combining protein adhering to phospholipid which is negative charged like PS. Accordingly can detect dead cell using Annexin-V Flamma® probe (Annexin V) detecting cell membrane imbalance of cell where apoptosis is occurring. This is apoptosis detecting product based on Annexin V at which Flamma® fluorescence technique was applied and has wide fluorescence selecting option to cope with various fluorescence channel except FITC channel.



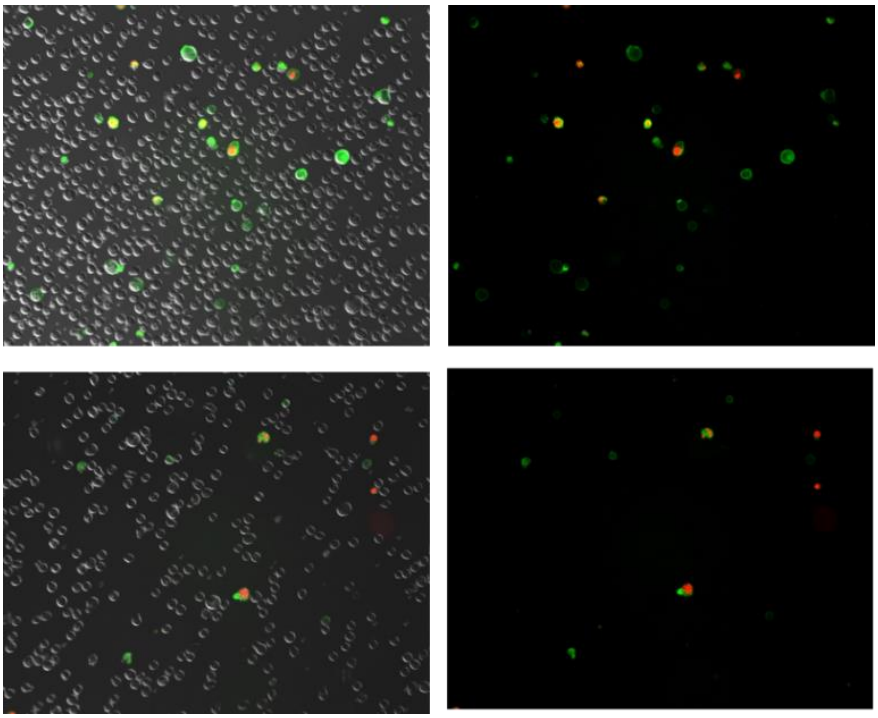
[Figure.5] Annexin V - Flamma® 488 cell staining

Induced apopotosis by treating Actinomycin D at HeLa cell in advance and obtained cell image after staining 1X Annexin V binding buffer 15 min with Annexin V - Flamma® 488 diluted with 1:20 dilution factor. Right drawing is fluorescence merging image and left drawing includes DIC.



[Figure.6] Annexin V - Flamma® 488, PI cell staining

Induced apopotosis by treating Actinomycin D on HeLa cell in advance and obtained cell image after staining 1X Annexin V binding buffer 15 min with Annexin V - Flamma® 488 (Green), PI (Yellow) diluted with 1:20 dilution factor. Right drawing is fluorescence merging image and left drawing includes DIC.



[Figure. 7] Annexin V - Flamma® 488 cell staining

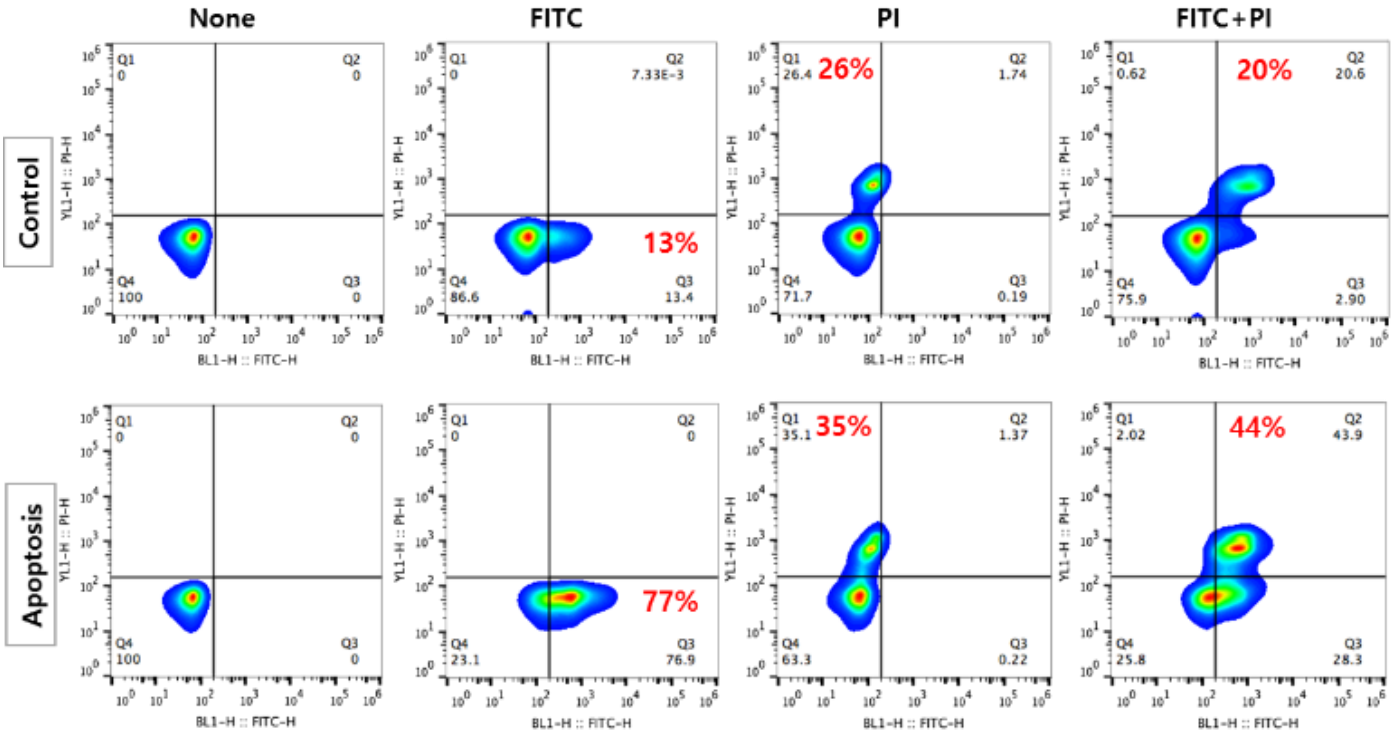
Induced apoptosis by treating Actinomycin D on HL 60 cell and obtained dell image by staining 1X Annexin V binding buffer 15 min with Annexin V - Flamma® 488 and 1ug/ml concentration of PI diluted with 1:20 dilution factor. Upper and lower image are same pictures and right picture is fluorescence merging image and left picture is right picture includes DIC picture. Cell marked with green color can detect early stage dead cell as stained with Annexin V - Flamma® 488 and knew red stained cell with PI is cell in necrosis.

Classification of dead cell, natural death or necrosis is needed to detect and analyze more specific dead cells with Annexin V Flamma® series. Such classification can be distinguished with staining pattern by proceeding double staining with Annexin V and propidium iodide (PI). PI is a principle to stain nucleic acid by permeating cell membrane of dead cell, can detect natural death or cell necrosis.

So normal living cell is not marked at Annexin V and PI, early stage dead cell is stained with Annexin V and natural death or cell subject to necrosis is stained with PI. Also late stage dead cells are stained both with Annexin V and PI, that is late stage dead cells' cell membrane is not strong that stained with PI permeated cell membrane together with Annexin V and can be analyzed.

Annexin V-Flamma® Apoptosis detection Kit includes PI solution and Annexin V Binding buffer. Through simple staining process, can be used to detect early stage apoptosis with Fluorescence microscope and Flow cytometry. Specimen analysis is performed on live cell and cell fixation process is not needed.

This is apoptosis detecting product based on Annexin V applied Flamma® fluorescence technique and has wide fluorescence selecting option to cope with various fluorescence channel except FITC channel.



[Figure. 8] Analysis and detection of Annexin V - Flamma® 488 and PI, parenchymatous cell

At Hela cell, apoptosis of cell was induced by treating with Actinomycin D in advance and after staining Annexin V - Flamma® 488, PI for 15min with 1X Annexin V binding buffer diluted with 1:20 dilution factor, check quantitative value through cell analysis.

Kit Component (Microscopy / FACS)

- Annexin V
- 5x Annexin V binding buffer
- Propidium iodide (PI)

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Size
XAP1101	Annexin V-FITC Apoptosis detection Kit	Green	495	522	50 assay, 250 assay
XAP1201	Annexin V- Flamma® 488 Apoptosis detection Kit	Green	494	519	50 assay, 250 assay
XAP1301	Annexin V-Flamma® 552 Apoptosis detection Kit	Yellow	550	565	50 assay, 250 assay
XAP1401	Annexin V-Flamma® 648 Apoptosis detection Kit	Red	648	665	50 assay, 250 assay
XAP1801	Annexin V-TAMRA Apoptosis detection Kit	Yellow	543	575	50 assay, 250 assay
XAP1901	Annexin V-Flamma® 560 Apoptosis detection Kit	Yellow	560	589	50 assay, 250 assay
XAP2102	Annexin V-FITC	Green	492	519	100 assay
XAP2202	Annexin V-Flamma® 488	Green	495	519	100 assay
XAP2302	Annexin V-Flamma® 552	Yellow	550	565	100 assay

Cell imaging probes

XAP2402	Annexin V-Flamma® 648	● Red	648	663	100 assay
XAP2802	Annexin V-TAMRA	● Yellow	543	575	100 assay
XAP2902	Annexin V- Flamma® 560	● Yellow	560	589	100 assay
XAP2022	Annexin V- Flamma® 675	● Red	675	691	100 assay

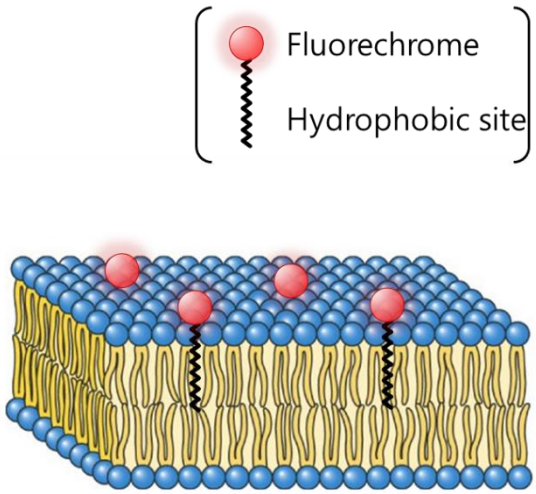
Citation & Reference

1. Molecular imaging of apoptosis: from micro to macro. Zeng W, Wang X, Xu P, Liu G, Eden HS, Chen X. *Theranostics.* 2015 Feb 20;5(6):559-82.
2. Quantification of apoptosis and necroptosis at the single cell level by a combination of Imaging Flow Cytometry with classical Annexin V/propidium iodide staining. Pietkiewicz S, Schmidt JH, Lavrik IN. *J Immunol Methods.* 2015 Aug;423:99-103. doi: 10.1016/j.jim.2015.04.025. PubMed PMID: 25975759.
3. Cell harvesting method influences results of apoptosis analysis by annexin V staining. Bundscherer A, Malsy M, Lange R, Hofmann P, Metterlein T, Graf BM, Gruber M. *Anticancer Res.* 2013 Aug;33(8):3201-4. PubMed PMID: 23898079.

4. CytoFlamma® series

CytoFlamma® Cell membrane

Cell membrane maintains cell's inner composition and homeostasis by forming barrier between inner and outer of cell. Cell membrane is consisted of phosphatide and protein, etc. Phosphatide forms bilayer by nature. Phosphatide is an amphipathic molecule having hydrophobic tail and hydrophilic head forms bilayered structure positioned hydrophobic to inside and hydrophilic to outside. Hydrophobic dye, CytoFlamma® Fluors stains cell membrane by permeating into hydrophobic part of cell membrane's lipid bilayer directly. Once stained having stain stability by fixed to hydrophobic part surrounded with hydrophilic phosphor and has merits of being able to use on live cell as can be permeated into cell membrane and low cell toxicity.



[Figure.9] Outer and inner formation of cell and mimetic diagram for principle

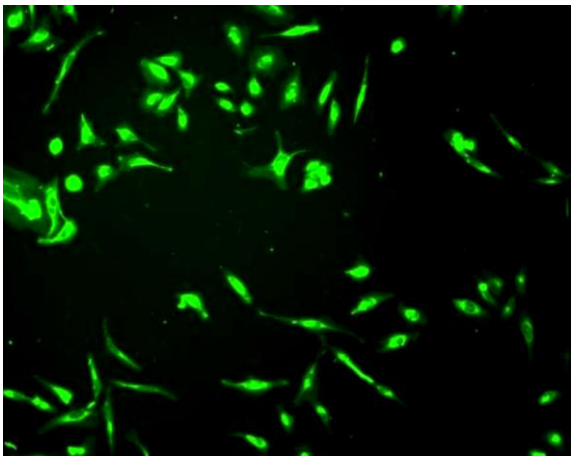
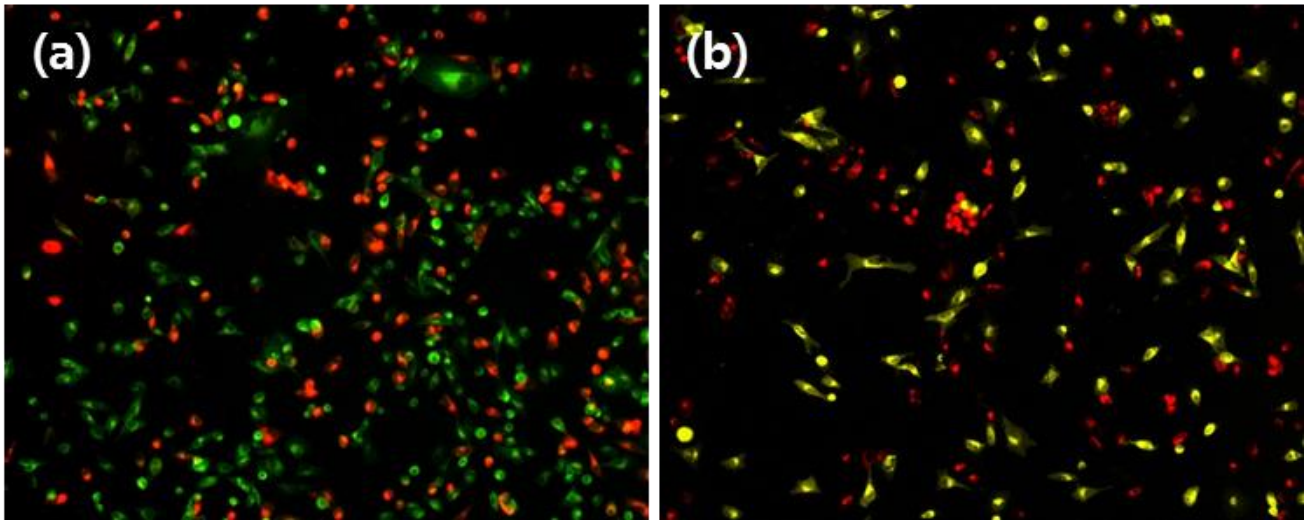


Figure.10] CytoFlamma®488 cell membrane staining

Detaching HeLa cell from plate and treating CytoFlamma®488 cell membrane and after 5 min staining, dividing to plate again and after 24hr cultivating, got image with FITC filter.



[Figure.11] Culture CytoFlamma® Cell membrane after staining

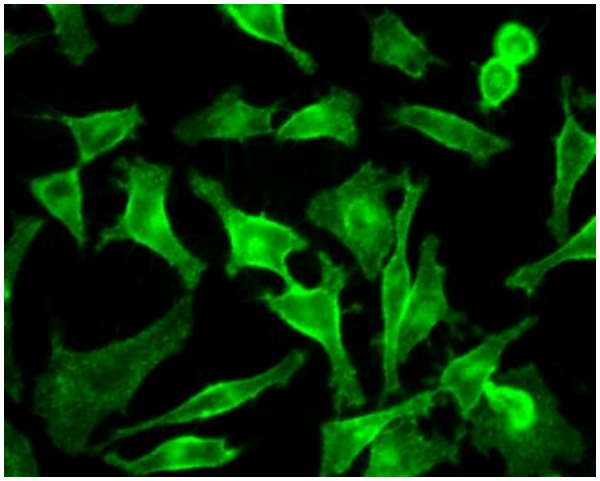
Result from cell cultivation after staining HeLa cell treated with CytoFlamma® series. (a) CytoFlamma® 496 (green) and CytoFlamma® 648 (red) (b) CytoFlamma® 552 (yellow) and CytoFlamma® 648 (red)

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size
RCS1211	CytoFlamma® 496 Cell membrane	Green	495	522	Fixed/Live cell	1mL
RCS1311	CytoFlamma® 552 Cell membrane	Yellow	551	570	Fixed/Live cell	1mL
RCS1411	CytoFlamma® 648 Cell membrane	Red	648	672	Fixed/Live cell	1mL
RCS1511	CytoFlamma® 675 Cell membrane	Far red	675	698	Fixed/Live cell	1mL

CytoFlamma® WGA

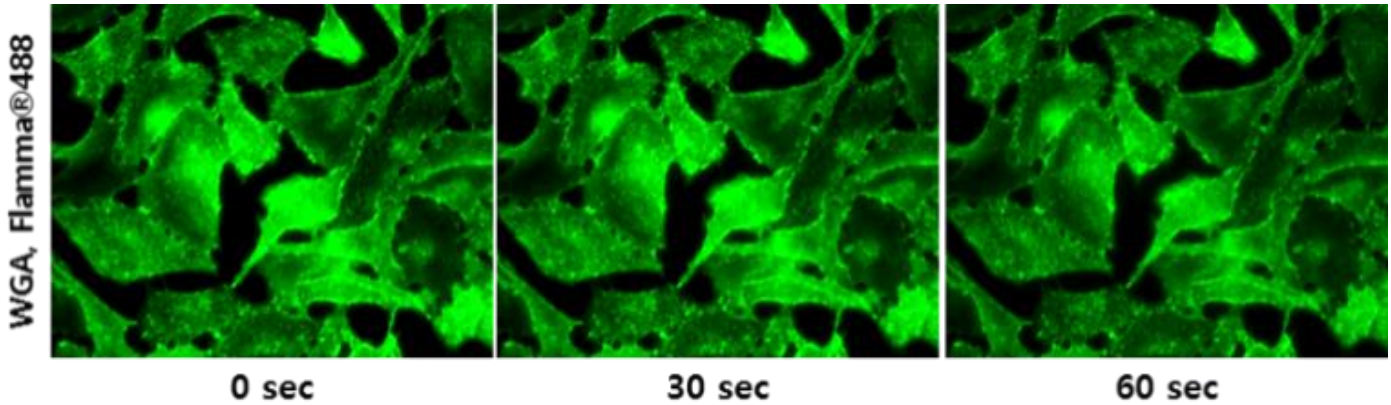
CytoFlamma®Fluor, WGA is staining reagent based on Wheat germ agglutinin(WGA), one kind of lectin and coupling of N-acetyl-β-D-glucosaminyl residues and N-acetyl-β-D-glucosamine oligomers of cell membrane. CytoFlamma®Fluor, WGA can be used on both live cell and fixed cell as having little toxicity and can be applied on tracing of cell-cell fusion, intercellular adhesion and metastasis, etc. But can't be used on permeabilized cell treated with membrane permeation as endomembrane can be stained.

BioAct's CytoFlamma®Fluor, WGA can get vivid image in case of long time imaging as having high purity WGA and combined with excellent dye of high photostability. Also provides big serviceability in designing multicolor imaging test as having various products per fluorescence wavelength.



[Figure.12] Microscope observation of CytoFlamma® 488 WGA

HeLa cell was treated with suitable amount of HBSS (Hank's Balanced Salt Solution) by dissolving CytoFlamma®488, WGA with 5ug/ml concentration and after cultivating 10 min at 37℃, washing with PBS and taking fluorescence image with FITC filter.



[Figure.13] Confirm photo stability of CytoFlamma® 488 WGA

As a test to confirm photostability of CytoFlamma®488, WGA, after exposing HeLa cell stained with CytoFlamma®488, WGA to light source about 1 min consistently and took films using FITC filter with 30 sec interval.

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size
RCS1113	CytoFlamma® 488 WGA	Green	496	519	Fixed/Live cell	2mg, 5mg
RCS1313	CytoFlamma® 552 WGA	Yellow	551	570	Fixed/Live cell	2mg, 5mg
RCS1913	CytoFlamma® 594 WGA	Yellow	591	617	Fixed/Live cell	2mg, 5mg
RCS1413	CytoFlamma® 648 WGA	Red	648	672	Fixed/Live cell	2mg, 5mg

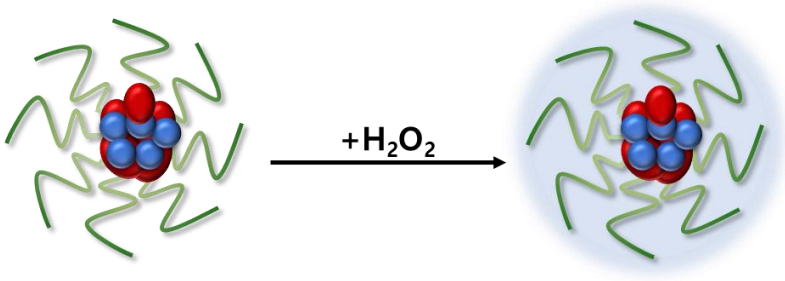
Citation & Reference

1. Wheat Germ Agglutinin Staining as a Suitable Method for Detection and Quantification of Fibrosis in Cardiac Tissue after Myocardial Infarction. B. Emde. *Eur J Histochem.* 2014 Oct 22; 58(4): 2448.
2. Labeling membrane glycoproteins or glycolipids with fluorescent wheat germ agglutinin. Chazotte B. *Cold Spring Harb Protoc.* 2011 May 1;2011(5)

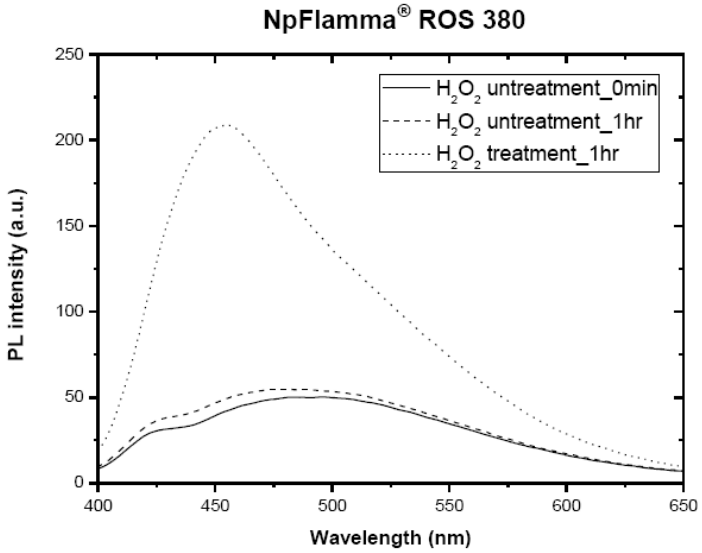
5. NpFlamma® series

NpFlamma® ROS 380

NpFlamma® ROS 380 is a compound generating fluorescence by reacting with active oxygen species and water base dispersion fluorescence probe available to detect various diseases related with inflammation in real time. This product is a fluorescence probe to measure oxidation stress and can observe Ex max. 380, Em max. 450nm when generating active oxygen species. Do not show fluorescence at reduction state but oxidized with active oxygen species, shows bright fluorescence. Merits of NpFlamma® ROS 380 is favorable to detect with high signal which is available even with low luminance efficiency compared to fluorescence detection method as there is no background fluorescence or optical interference without need to check various lights.



[Figure14] NpFlamma® ROS 380 reaction scheme



[Figure.15] Fluorescence signal measuring graph according to existence and non- existence of H_2O_2 of NpFlamma® ROS 380

Result of observing fluorescence signal, 1hr after treating H_2O to NpFlamma® ROS 380 1mg/ml. Can confirm difference of fluorescence signal of particle contingent upon H_2O_2 treatment.

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size
SSH0001	NpFlamma® ROS 380	● Blue	380	450	ROS detection	1mg

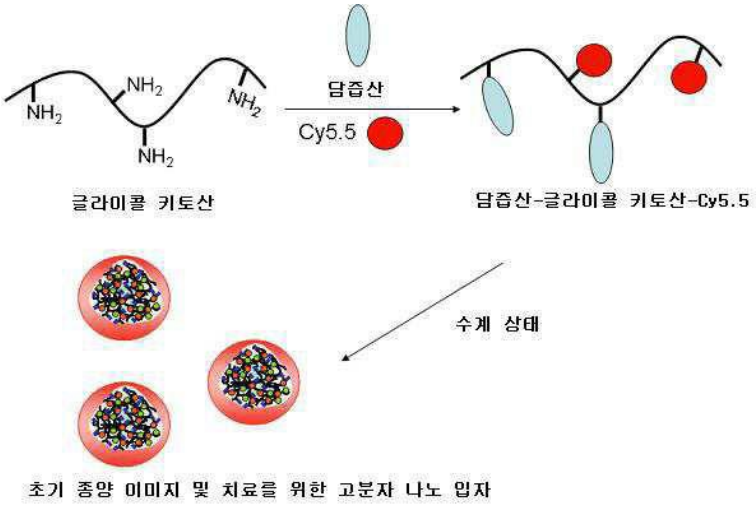
Citation & Reference

1. Fluorogenic nanoreactor assembly with boosted sensing kinetics for timely imaging of cellular hydrogen peroxide. J Heo, CK Lim, *Chem. Commun.*, 2016, 52, 1131-1134.

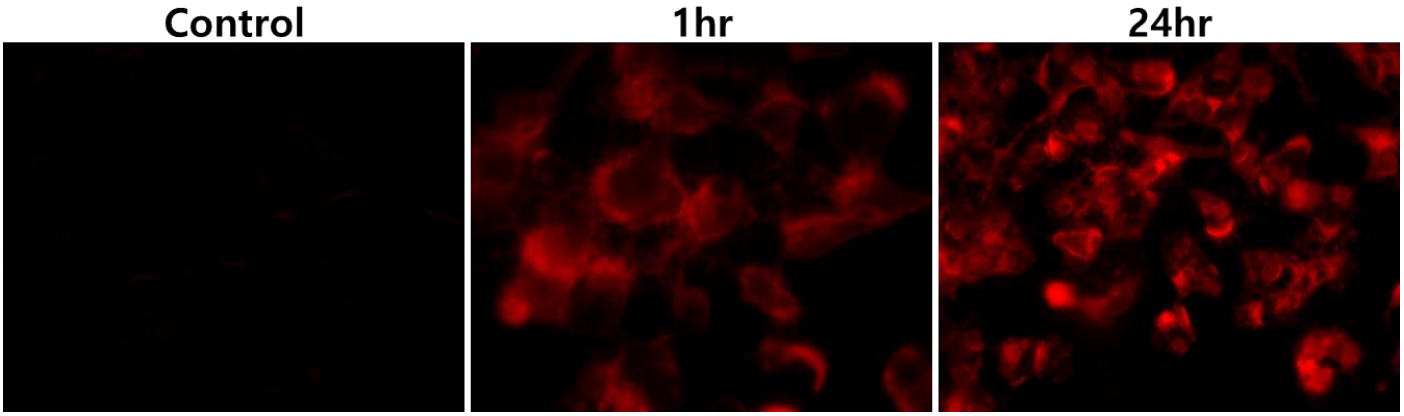
NpFlamma® HGC series

NpFlamma® HGC series is a NIR fluorescence contrast media can be used on in-vivo but can be used for intracellular imaging. NpFlamma® HGC series is a nanoparticle of colloidal size based on combination of chitosan and NIR fluorescence dye, Flamma® NIR and hydrophobic inner of NpFlamma® can contain non hydrophilic drug so can be used for effective delivery of tumor drug by partnering with passive targeting action. And also, carboxyl group on the surface of NpFlamma® HGC series was developed to mark peptide, protein such as antibody, etc or biomolecules having other amine, etc. NpFlamma® which can get more effective research image with progressive fluorescence technique of Flamma® NIR has little toxicity and pharmacological side effect.

NpFlamma® HGC series developed on basis of chitosan nanoparticles were completed by BioAct's patented technique. Basic material, chitosan is a bone derived material that is free from toxicity and long half-life, high photostability and high water solubility are merits.

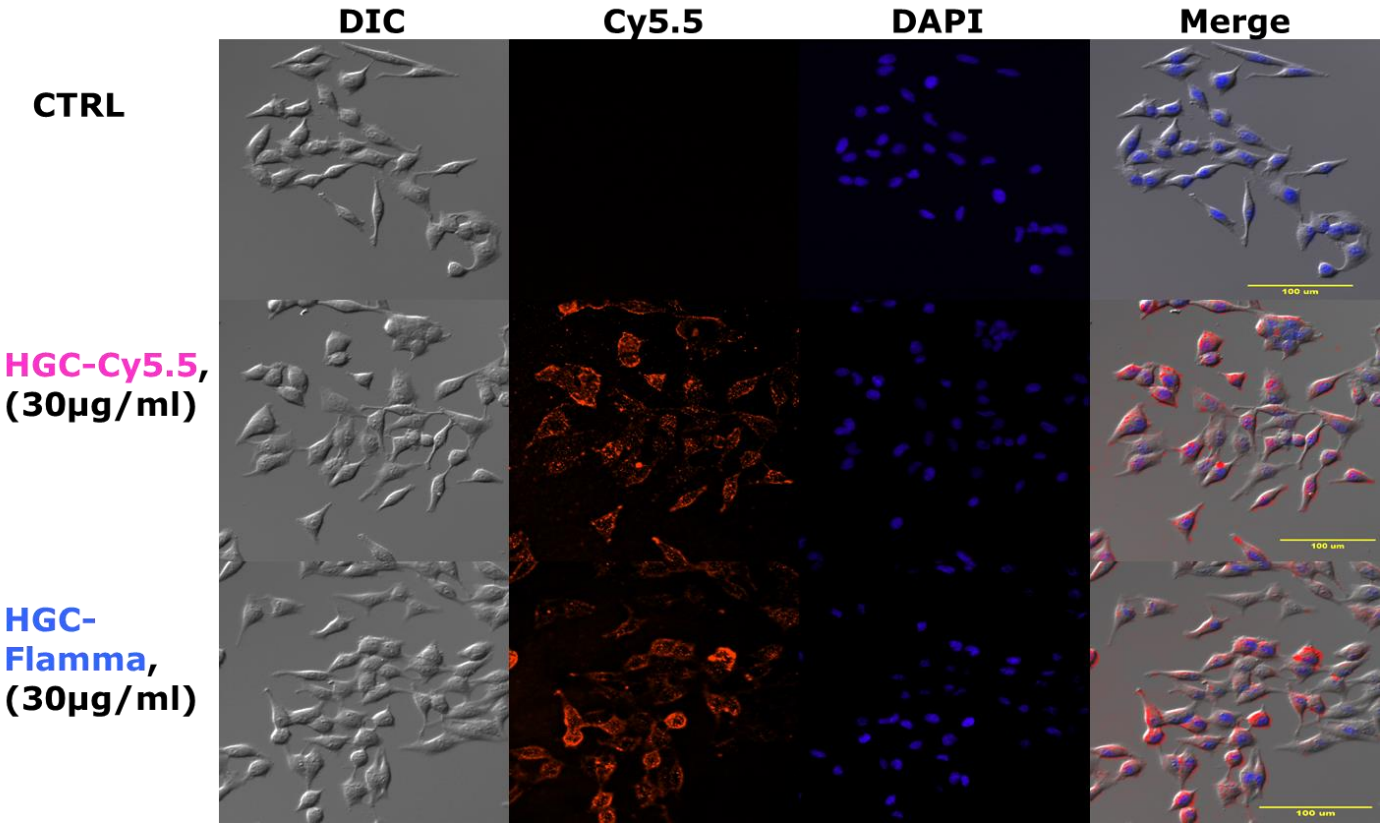


[Figure.16] NpFlamma® HGC mimetic diagram



[Figure.17] HGC 675 cell image

This is a result of tidal measurement of image by treating HeLa cell with 1mg/ml concentration of NpFlamma® HGC 675. Can confirm absorption into cell treated with NpFlamma® HGC 675 against control group.



[Figure.18] Cell reflection image of HGC-Cy 5.5 and HGC-675

This is measurement result of each cell treated with NpFlamma® HGC 675 and HGC-Cy 5.5. Well absorbed into cell and confirmed both dyes are showing equivalent tendency.

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Common filter set	Excitation laser line	Size
PNC1201	NpFlamma® HGC 648	● Red	648	675	Cy®5	594, 633 nm	10 doses, 50 doses, 250 doses
PNC1401	NpFlamma® HGC 675	● Far red	675	698	Cy®5.5	633, 680 nm	10 doses, 50 doses, 250 doses

6. Dextran, Flamma® series

Dextran is a polysaccharide widely used for drug formulation and used for developing diagnostic agent and application technique including in vivo imaging. As based on hydrophilic polysaccharide of various molecular weight so high solubility and low toxicity are features. Can be used for fluorescence blood vessel contrast medium and also can be used as marker for phagocytosis and internal processing of absorption and extrinsic material by intracellular endocytotic pathway. Marked dextran is a hydrophilic polysaccharide used for microscope research to trace cell movement and report hydraulic characteristic of cytoplasmic matrix by monitoring cell division. Generally marked dextran is transduced by micro injection.

BioActs supplys various fluorescence dextran zygote in the range of several molecular weight and holds various fluorescence marking dextran in the wide range from NIR to UV. This can be used for diagnosis and preparatory stage of new drug development.

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Common filter set	Excitation laser line	Size
RSC0201	Dextran (3K), FAM	Green	492	519	FITC	488 nm	5mg
RSC0202	Dextran (3K), Flamma® 488	Green	495	519	FITC	488 nm	5mg
RSC0205	Dextran (3K), Flamma® 552	Yellow	550	565	TRITC	488, 532 nm	5mg
RSC0207	Dextran (3K), Flamma® TAMRA	Orange	543	575	TRITC	488, 532 nm	5mg
RSC0208	Dextran (3K), Flamma® 560	Orange	560	589	TRITC	488, 532 nm	5mg
RSC0211	Dextran (3K), Flamma® 648	Red	648	663	Cy®5	594, 633 nm	5mg
RSC0212	Dextran (3K), Flamma® 675	Far red	675	691	Cy®5.5	633, 680 nm	5mg
RSC0301	Dextran (10K), FAM	Green	492	519	FITC	488 nm	5mg
RSC0302	Dextran (10K), Flamma® 488	Green	495	519	FITC	488 nm	5mg
RSC0305	Dextran (10K), Flamma® 552	Yellow	550	565	TRITC	488, 532 nm	5mg
RSC0307	Dextran (10K), Flamma® TAMRA	Orange	543	575	TRITC	488, 532 nm	5mg
RSC0308	Dextran (10K), Flamma® 560	Orange	560	589	TRITC	488, 532 nm	5mg
RSC0311	Dextran (10K), Flamma® 648	Red	648	663	Cy®5	594, 633 nm	5mg
RSC0312	Dextran (10K), Flamma® 675	Far red	675	691	Cy®5.5	633, 680 nm	5mg

Citation & Reference

1. A fluorescence-based in vitro assay for investigating early endosome dynamics. 2010. Barysch SV, Jahn R, Rizzoli SO. *Nat Protoc*. 5, 127-1137.
2. A UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase is required for epithelial tube formation. 2007. Tian E, Ten Hagen KG. *J Biol Chem*. 282, 606-614.
3. Automated organelle-based colocalization in whole-cell imaging. 2009. Woodcroft BJ, Hammond L, Stow JL, Hamilton NA. *Cytometry A*. 75, 941-950.

7. BSA, Flamma® series

Bovine serum albumin, BSA complex is generally used as a tracer for application experiment where physical size is important. Fluorescence BSA complex can be used for plasma volume measuring quantitative research and also can be used in producing peptide antigen for the purpose of producing immunity and antibody. BioActs' BSA conjugate product is a zygote having photostability as well as bright fluorescence and can research endocytosis, exocytosis and protein processing. Also can be used for diagnose agent which can trace tumor by inosculating fluorescence. It has advantage of obtaining good result in the in-vivo test as based on albumin.

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Common filter set	Excitation laser line	Size
RSC0101	BSA, FAM	Green	492	519	FITC	488 nm	5mg
RSC0102	BSA, Flamma® 488	Green	495	519	FITC	488 nm	5mg
RSC0105	BSA, Flamma® 552	Yellow	550	565	TRITC	488, 532 nm	5mg
RSC0107	BSA, Flamma® TAMRA	Orange	543	575	TRITC	488, 532 nm	5mg
RSC0108	BSA, Flamma® 560	Orange	560	589	TRITC	488, 532 nm	5mg
RSC0111	BSA, Flamma® 648	Red	648	663	Cy®5	594, 633 nm	5mg
RSC0112	BSA, Flamma® 675	Far red	675	691	Cy®5.5	633, 680 nm	5mg

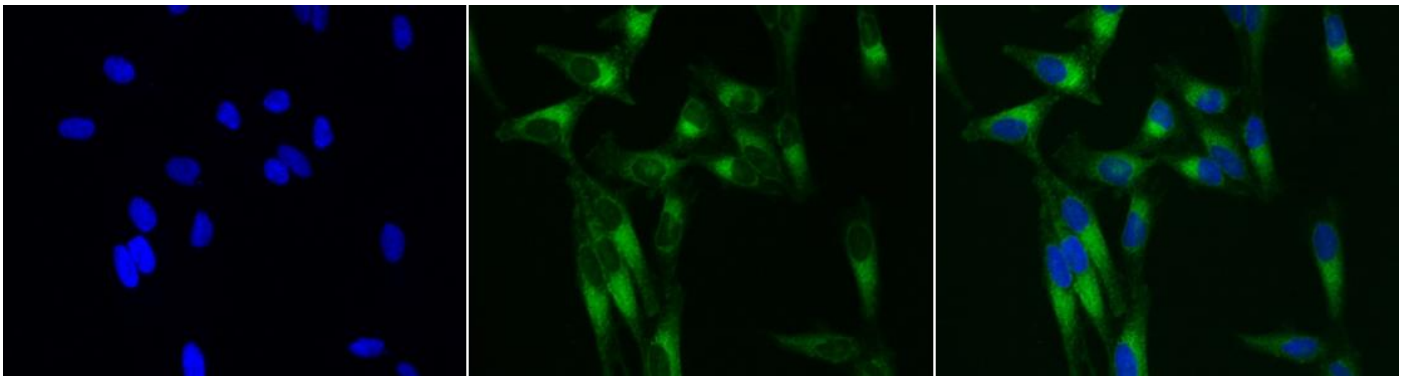
Citation & Reference

1. A betaPix Pak2a signaling pathway regulates cerebral vascular stability in zebrafish. Liu J. *Proc Natl Acad Sci U S A.* . 2007 Aug 28;104(35):13990-5
2. Cell mechanics control rapid transitions between blebs and lamellipodia during migration. Bergert M. *Proc Natl Acad Sci U S A.* 2012 Sep 4;109(36):14434-9.
3. Measuring molecular rupture forces between single actin filaments and actin-binding proteins. Ferrer JM. *Proc Natl Acad Sci U S A.* 2008 Jul 8;105(27):9221-6.

Organelle target

1. MitoFlamma™ Green

MitoFlamma™ Green is a green fluorescence probe specifically staining mitochondria of cell. By marking mitochondria of live cell, can trace it by imaging cell mutation from drug or external stimulus. Also designed to make further processing is possible by fixing mitochondria after marking so having good advantage of multi imaging as mitochondria staining is maintained after fixing. After fixing further test such as immunocytochemistry or in situ hybridization, etc are possible and various test design and analysis meets to test purpose is also possible. This probe can be applied for fluorescence microscopy or flow cytometry and analysis based on microplate. MitoFlamma ™ Green is a mitochondria marking product based on BODIPY dye, can obtain cell fluorescence image using FITC filter.

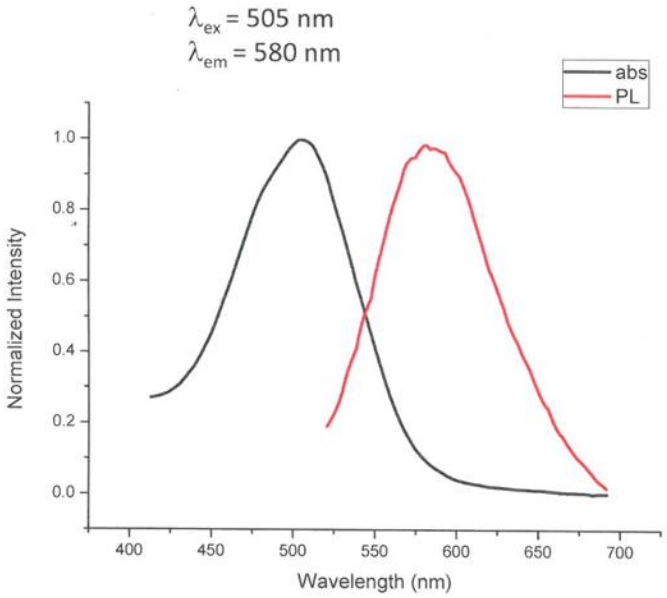


[Figure.19] MitoFlamma™ Green /HeLa cell staining

After treating HeLa cell with MitoFlamma™ Green product diluted to 1uM concentration 1hr at 37℃ with 5% CO_2 condition, using 4% paraformaldehyde fixed cell and stained nucleus with DAPI together. Can confirm specific mark of nucleus and mitochondria with cell fluorescence image and from left in sequence it is the result of merging DAPI and MitoFlamma™ Green.

Product features

- Target organelle: Mitochondria
- Application: Flow Cytometer, Fluorescence Microscope, Microplate Reader
- Unit size: 1mg, 20 x 50 μg
- Molecular Weight: 714.50
- Excitation / Emission (nm): 508 / 580 nm
- Common filter set: FITC filter
- Soluble solvent: DMF / DMSO
- Solvents for used to cells: 1% DMSO in PBS or media
- Storage condition: -20℃, protect from light



[Figure.20] MitoFlamma™ Green Fluorescence spectra
This is absorbance/fluorescence spectrum of MitoFlamma™ Green shows relative absorbance /fluorescence value at all wavelength. Black line graph is absorbance value and red line is fluorescence value graph. Absorbance value is highest at 505nm and fluorescence has highest value at 580nm.

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size
RMS1101	MitoFlamma™ Green	● Green	508	580	Mitochondria staining(Live cell)	20x50 ug, 1mg

2. Conjugated Primary Antibody

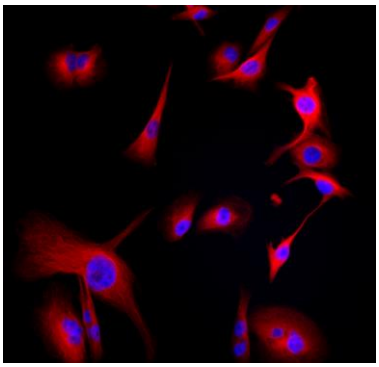
Direct or primary immunofluorescence (IF) method uses single primary antibody marked fluorescence agent. Fluorescence marked primary antibody recognizes and combines to part in the antibody called as epitope, can detect and trace antibody recognized by inducing fluorescence reaction to marked fluorescence agent. Direct immunofluorescence method uses only one antibody per target antibody is short in test process as using antibody is fewer than indirect immunofluorescence method and nonspecific background signal is low and holds relatively free characteristics at the cross reactivity of secondary antibody. But fluorescence agent staining ratio per antibody is several times lower than indirect immunofluorescence method that sensitivity drops due to low fluorescence brightness.

BioActs provides fluorescence antibody manufactured for direct immunofluorescence through antibody labelling service. We offer primary fluorescence antibody which can be used to any equipment by matching through combination of hundreds of thousands of antibody library and Flamma® Fluor of strong fluorescence efficiency.

CytoFlamma® Tubulin

Cell organize space through interconnection of cytoskeleton (cytoskeleton: microfilaments, microtubules, intermediate filaments) and maintain 3 dimensional structure. Cytoskeleton plays key role in cellular migration and division and especially supports active migration of cell constructs such as membrane bound organelle in the cytoplasm of eukayote including, mRNA (messenger RNA), so has intimate relation with disease research.

Cell structure detecting probe of Bioacts supports more bright and clear image with advanced technique.



[Figure.21] CytoFlamma® 594 tubulin

It is the result of Microscopic observation of HeLa cell treated with suitable amount of CytoFlamma®594 tubulin and cultivated 1hr at 25℃.

Cat. No.	Product name	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Available for	Size
RCS1112	CytoFlamma® 488 Tubulin	Green	496	519	fixed cell	0.5mL
RCS1312	CytoFlamma® 552 Tubulin	Yellow	551	570	fixed cell	0.5mL
RCS1912	CytoFlamma® 594 Tubulin	Red	591	617	fixed cell	0.5mL
RCS1412	CytoFlamma® 648 Tubulin	Red	648	672	fixed cell	0.5mL
RCS1512	CytoFlamma® 675 Tubulin	Far red	675	698	fixed cell	0.5mL

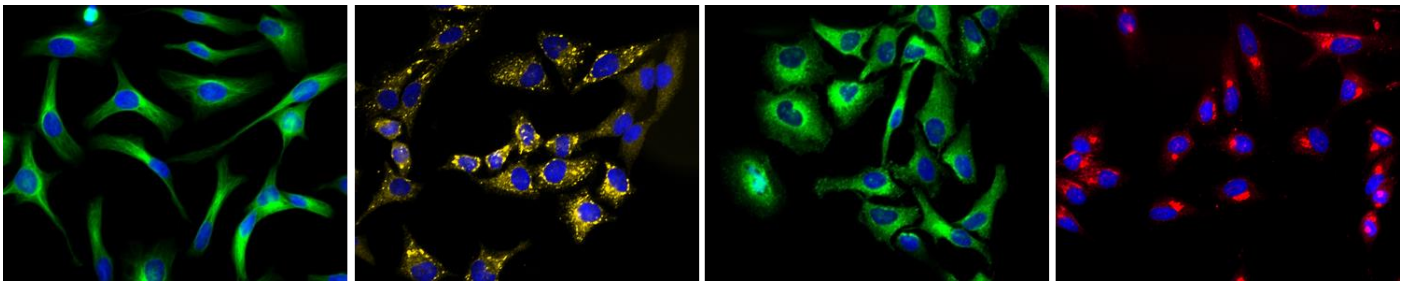
3. Immunofluorescence Imaging

Unconjugated Primary Antibody

BioActs supplys high purity primary antibody. Can get clear image by using primary antibody targeting cell organelle such as Tubulin, Mitochondria, Autophagosome, golgi and wide lines of secondary antibody combined with excellent and various kinds of fluorescence dye Flamma® series or horseradish peroxidase (HRP) together. BioActs' fluorescence secondary antibody drives best result at the most fluorescence link system such as fluorescence microscope and Confocal Laser Scanning Microscope (CLSM), flow cytometry, fluorescence western blot, etc under strict production process and QC. BioActs' HRP secondary antibody also shows ultimate performance in the all area of chemiluminescent detection systems for proteome sympathy. More information can be referenced from technique supporting part of bioacts.com or antibodycenter.co.kr.

Cat. No.	Product name	Host	Target	Available for	Size
RPA5414	Alpha tubulin antibody (Tubulin)	**Mouse**	Human, Mouse, Rat	FACS, ICC, IF, IHC, IP, WB	100ul
RPA4111	Cox4 antibody (Mitochondria)	**Rabbit**	Human, Rat	FACS, ICC, IF, IHC, IP, WB	100ul
RPA4313	LC3B Antibody (Autophagosome)	**Rabbit**	Human, Rat, Mouse	FACS, ICC, IF, IHC, IP, WB	100ul
RPA5212	Golgin-97 Antibody (Golgi)	**Mouse**	Human	FACS, ICC, IF, IHC, IP, WB	100ug

Conjugated Secondary Antibody for Imaging



Indirect or secondary immunofluorescence method is more generally used than a combined method of direct fluorescence method and secondary antibody due to strong signal amplification structure and low cost advantages. Primary antibody of indirect immunofluorescence method is an antibody specifically combines to target molecule has no fluorescence label, secondary antibody is an antibody using primary antibody as an antibody and is a polyclonal antibody as well as labelled fluorescence agent and has characteristics of several secondary antibodies combination to a molecule of primary antibody. The antibody of indirect immunofluorescence'-'primary antibody'-'secondary antibody' union structure has several times more stained fluorescence agent numbers per a molecule of antibody than antibody of direct immunofluorescence- primary antibody, so has highly amplified fluorescence signal. But indirect immunofluorescence method has more complicated union structure than direct immunofluorescence method that should be careful at nonspecific fluorescence signal and cross reaction and test process is somewhat cumbersome.

BioActs' fluorescence secondary antibody was developed by combining high peculiarity antibody and

Product Information

Flamma® Fluor of strong fluorescence performance. Please try BioActs fluorescence secondary antibodies consisted of various antibody line up and wide fluorescence spectrum.

Host	Target	Fluorephore	Cat. No.	Emission color	Ex_{Max} (nm)	Em_{Max} (nm)	Application	Size
Goat	anti-Mouse IgG	Flamma® 488	RSA1141	Green	495	519	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 552	RSA1151	Yellow	550	565	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 594	RSA1191	Red	590	617	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 648	RSA1161	Red	648	665	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		HRP	RSA1122	-	-	-	ICC, IP, ELISA, IHC, WB	0.5mg, 1mg, 2mg
	anti-Rabbit IgG	Flamma® 488	RSA1241	Green	494	523	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 552	RSA1251	Yellow	550	565	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 594	RSA1291	Red	560	589	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 648	RSA1261	Red	648	665	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		HRP	RSA1221	-	-	-	ICC, IP, ELISA, IHC, WB	0.5mg, 1mg, 2mg
	anti-Rat IgG	Flamma® 488	RSA1541	Green	495	519	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 552	RSA1551	Yellow	550	565	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 594	RSA1591	Red	590	617	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 648	RSA1561	Red	648	665	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		HRP	RSA1521	-	-	-	ICC, IP, ELISA, IHC, WB	0.5mg, 1mg, 2mg
Rabbit	anti-Goat IgG	Flamma® 488	RSA4441	Green	495	519	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 552	RSA4451	Yellow	550	565	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 594	RSA4491	Red	590	617	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		Flamma® 648	RSA4461	Red	648	665	FACS, ICC, IF, IHC, IP, WB	0.5mg, 1mg, 2mg
		HRP	RSA4421	-	-	-	ICC, IP, ELISA, IHC, WB	0.5mg, 1mg, 2mg

Citation & Reference

1. Promoter- and RNA polymerase II-dependent hsp-16 gene association with nuclear pores in Caenorhabditis elegans. Rohner S,Kalck V,Wang X,Ikegami K,Lieb JD,Gasser SM,Meister P *The Journal of cell biology* (200:589)
2. BRAG2/GEP100/IQSec1 interacts with clathrin and regulates α5β1 integrin endocytosis through activation of ADP ribosylation factor 5 (Arf5). Moravec R,Conger KK,D'Souza R,Allison AB,Casanova JE *The Journal of biological chemistry* (287:31138)

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