



Poly Caspases FLICA™ Detection Kit, Apoptosis vs. Necrosis

Cat.#	Reagent	Size	Fluorescence
91	FAM-VAD-FMK	25 tests	green
92	FAM-VAD-FMK	100 tests	green

- Amstad, P. A., G. Yu, G.L. Johnson, B.W. Lee, S. Dhawan and D.J. Phelps. 2001. Detection of caspase activation in situ by fluorochrome-labeled caspase inhibitors. *Biotechniques* vol 31:608-614.
- Bedner, E., P. Smolewski, P. Amstad, and Z. Darzynkiewicz. 2000. Activation of caspases measured in situ by binding of fluorochrome-labeled inhibitors of caspases (FLICA): correlation with DNA fragmentation. *Exp Cell Res* vol 259:308-313
- Buller, G., Bradford, J., Rothe, A., Janes, M., Salisbury, J., Ignatius, M., and Godfrey, W. 2004. Detection of apoptosis markers over time after induction. Poster presented at the American Society for Cell Biology, December, 2004.
- Darzynkiewicz, Z., E. Bedner, P. Smolewski, B.W. Lee and G.L. Johnson. 2001. Detection of caspases activation in situ by fluorochrome-labeled inhibitors of caspase (FLICA). *Meth. Mol. Biol.* vol 203:289-299.
- Darzynkiewicz, Z., J. Grabarek, H.D. Halicka, and P. Smolewski. 2002. Assay of caspase activation in situ combined with probing plasma membrane integrity to detect three distinct stages of apoptosis. *Journal of Immunological Methods* vol 265:111-121.
- Gougeon, M. L., Lecoeur, H., 2002. Evaluation of apoptosis. *Journal of Immunological Methods* vol. 265, 1-2, 1 July 2002, pp. 1-2.
- Grabarek, J., P. Amstad, and Z. Darzynkiewicz. 2002. Use of fluorescently labeled caspase inhibitors as affinity labels to detect activated caspases. *Human Cell* vol 15(1):1-12.
- Grabarek, J., Darzynkiewicz, Z. 2002. In situ activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.
- Graberek, J., Dragan, M., Lee, B. W., Johnson, G. L., Darzynkiewicz, Z. 2002. Activation of chymotrypsin-like serine protease(s) during apoptosis detected by affinity-labeling of the enzymatic center with fluoresceinated inhibitor. *Int. J. Oncol* vol 20:225-233.
- Graberek, J., L. Du, G.L. Johnson, B.W. Lee, D.J. Phelps and Z. Darzynkiewicz. 2002. Sequential activation of Caspases and serine proteases (serpases) during apoptosis. *Cell Cycle* vol 1:124-131.

Poly Caspases FLICA™ Detection Kit, Apoptosis vs. Necrosis

Cat.#	Reagent	Size	Fluorescence
916	SR-VAD-FMK	25 tests	reddish orange
917	SR-VAD-FMK	100 tests	reddish orange

- Fiala, M., Lin, J., Ringman, J., Kermani-Arab, V., Tsao, G., Patel, A., Lossinsky, A.S., Graves, M.C. Gustavson, A., Sayre, J., Sofroni, E., Surarez, T., Chiappelli, F. and Bernard, G. 2005. Ineffective phagocytosis of amyloid- β by macrophages of Alzheimer's disease patients. *Journal of Alzheimer's Disease* vol 7:221-232.

- McQueen, T., S.M. Kornblau, M. Konopleva, K. Edwards, M. Andreeff, J. Cortes, E. Estey, and F. Giles. 2001. Caspase independent cell death in AML: An in vivo study in patients undergoing chemotherapy. *Blood* vol 98:208b.
- Piguet, P. F., and C. Vesin. 2002. Modulation of platelet caspases and life-span by anti-platelet antibodies in mice. *Eur J Haematol* vol 68:253-61.
- Pozarowski, P., X. Huang, D. H. Halicka, B. Lee, G. Johnson, and Z. Darzynkiewicz. 2003. Interactions of fluorochrome-labeled caspase inhibitors with apoptotic cells: a caution in data interpretation. *Cytometry* vol. 55A:50-60.
- Smolewski, P., E. Bedner, L. Du, T.C. Hsieh, J.M. Wu, D.J. Phelps, and Z. Darzynkiewicz. 2001. Detection of caspases activation by fluorochrome-labeled inhibitors: Multiparameter analysis by laser scanning cytometry. *Cytometry* vol 44:73-82.
- Smolewski, P., Grabarek, J., Halicka, H.D., and Darzynkiewicz, Z. 2002. Assay of caspase activation in situ combined with probing plasma membrane integrity to detect three distinct stages of apoptosis. *Journal of Immunological Methods* vol 265:111-121.
- Smolewski, P., Grabarek, J., Lee, B. W., Johnson, G. L., Darzynkiewicz, Z. 2002. Kinetics of HL-60 cell entry to apoptosis during treatment with TNF-alpha or camptothecin assayed by the stathmo-apoptosis method. *Cytometry* vol. 47:143-149.
- Teodori, L., Grabarek, J., Smolewski, P., Ghibelli, L., Bergamaschi, A., De Nicola, M., and Darzynkiewicz, Z. 2002. Exposure of cells to static magnetic field accelerates loss of integrity of plasma membrane during apoptosis. *Cytometry* vol 49(3):113-118.
- Valero, A., Merino, F., Wolbers, F., Luttge, R., Vermees, I., Andersson, H. and van den Berg, A. 2005. Apoptotic cell death dynamics of HL60 cells studied using a microfluidic cell trap device. *Lab Chip* vol 5:49-55.
- Widen, R., C.A. Newton, T.W. Klein, and H. Friedman. 2001. Apoptosis of thioglycollate-elicited macrophages from A/J mice infected with virulent Legionella pneumophila. *Abstracts of the General Meeting of the American Society for Microbiology* vol 101:295-296.
- Wlodkowic, D., Skommer, J., Pelkonen, J. 2006. Multiparametric analysis of HA14-1-induced apoptosis in follicular lymphoma cells. *Leuk Res* vol 30(9):1187-1192.
- Wolbers, F., Buijtenhuijs, P., Haanen, C., and Vermees, I. 2004. Apoptotic cell death kinetics in vitro depend on the cell types and the inducers used. *Apoptosis* vol 9:385-392.



Caspase 1 FLICA™ Detection Kit

Cat.#	Reagent	Size	Fluorescence
97	FAM-YVAD-FMK	25 tests	green
98	FAM-YVAD-FMK	100 tests	green

1. Grabarek, J., P. Amstad, and Z. Darzynkiewicz. 2002. Use of fluorescently labeled caspase inhibitors as affinity labels to detect activated caspases. *Human Cell* vol 15(1):1-12.

2. Grabarek, J., and Z. Darzynkiewicz. 2002. In situ activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.
3. Grunewald, S., Paasch, U., Said, T.M., Sharma, R.K., Glander, H.J., Agarwal, A. 2005. Caspase activity in human spermatozoa in response to physiological and pathological stimuli. *Fertility and Sterility* vol 83:1106-1112.
4. Scotton, C.J., Martinez, F.O., Smelt, M.J., Sironi, M., Locati, M., Mantovani, A., and Sozzani, S. 2005. Transcriptional profiling reveals complex regulation of the monocyte IL-1 α system by IL-13. *The Journal of Immunology*. 834-845.

Caspase 2 FLICA™ Detection Kit

Cat.#	Reagent	Size	Fluorescence
918	FAM-VDVAD-FMK	25 tests	green
919	FAM-VDVAD-FMK	100 tests	green

Caspases 3&7 FLICA™ Detection Kit

Cat.#	Reagent	Size	Fluorescence
93	FAM-DEVD-FMK	25 tests	green
94	FAM-DEVD-FMK	100 tests	green

1. Bianco, F., Pravettoni, E., Colombo, A., Schenk, U., Moller, T., Matteoli, M., and Verderio, C. 2005. Astrocyte-derived ATP induces vesicle shedding and IL-1 α release from microglia. *The Journal of Immunology* vol 174:7268-7277.
2. Chwa, M., Atilano, S. R., Reddy, V., Jordan, N., Kim, D. W., Kenney, M. C. 2006. Increased stress-induced generation of reactive oxygen species and apoptosis in human keratoconus fibroblasts. *Investigative Ophthalmology and Visual Science* May 2006 vol 47, no. 5, 1902-1910.
3. Feng, Y., Hu, J., Xie, D., Oin, J., Zhong, Y., Li, X., Xiao, W., Wu, J., Tao, D., Zhang, M., Zhu, Y., Song, Y., Reed, E., Li, O.O., and Gong, J. 2005. Subcellular localization of caspase-3 activation correlates with changes in apoptotic morphology in MOLT-4 leukemia cells exposed to X-ray irradiation. *Int J Oncol* vol 27(3):699-704.
4. Feng, Y.D., Xie, D.X., Oin, J.C., Zhong, Y.S., Li, X.L., Xiao, W., Wu, J.H., Tao, D.D., Hu, J.B., and Gong, J.P. 2004. Correlation of intracellular localization and variations of active caspase-3 to morphology changes in apoptotic MOLT-4 cells induced by X-ray. *Ai Zheng* vol 23(9):1011-1015.
5. Fiala, M., Papik, W., Qiao, J.H., Lossinsky, A.S., Alce, T., Tran, K., Yang, W., Roos, K.P., Arthos, J. 2004. HIV-4 induces cardiomyopathy by cardiomyocyte invasion and gp120, Tat and cytokine apoptotic signaling. *Cardiovasc Toxicol* vol 4(2):97-107.
6. Grabarek, J., P. Amstad, and Z. Darzynkiewicz. 2002. Use of fluorescently labeled caspase inhibitors as affinity labels to detect activated caspases. *Human Cell* vol 15(1):1-12.

1. Grabarek, J., P. Amstad, and Z. Darzynkiewicz. 2002. Use of fluorescently labeled caspase inhibitors as affinity labels to detect activated caspases. *Human Cell* vol 15(1):1-12.
2. Grabarek, J., and Z. Darzynkiewicz. 2002. In situ activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.

7. Grabarek, J., and Z. Darzynkiewicz. 2002. In situ activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.
8. Grunewald, S., Paasch, U., Said, T.M., Sharma, R.K., Glander, H.J., Agarwal, A. 2005. Caspase activity in human spermatozoa in response to physiological and pathological stimuli. *Fertility and Sterility* vol 83:1106-1112.

9. Kahraman, S., Zup, S. L., McCarthy, M. M., Fiskum, G. October 18, 2006. GABAergic mechanism of propofol toxicity in immature neurons. Poster presented at the 2006 Society for Neuroscience annual meeting.
10. Kon, K., Kim, J. S., Jaeschke, H., Lemasters, J. J. 2004. Mitochondrial permeability transition in acetaminophen-induced necrosis and apoptosis of cultured mouse hepatocytes. *Hepatology* 40:1170-1179.
11. Paasch, U., Sharma, R.K., Gupta, A.K., Grunewald, S., Mascha, E.J., Thomas, A.J. Jr., Glander, H.J., and Agarwal, A. 2004. Cryopreservation and thawing is associated with varying extent of activation of apoptotic machinery in subsets of ejaculated human spermatozoa. *Biology of Reproduction* vol 71:1828-1837.
12. Takahashi, A., Hanson, M.G.V., Norell, H. R., Havelka, A. M., Kono, K., Malmberg, K.J., and Kiessling, R.V.R. 2005. Preferential cell death of CD8+ effector memory (CCR7-CD45RA-) T cells by hydrogen peroxide-induced oxidative stress. *The Journal of Immunology*. 6080-6087.
13. Trummell, H.Q., Raisch, K.P., Seay, L.L., and Bonner, James, A. 2004. AKT activity following exposure to IMC-C225 alone, radiation alone or a combination of both treatments. Poster presented at the American Association for Cancer Research, March 27-31, 2004, abstract # 1293.
14. VanOsten, R.L., Moore, J.M., Karacay, B., Griffith, T.S. 2005. Histone deacetylase inhibitors modulate renal cell carcinoma sensitivity to TRAIL/Apo-2L-induced apoptosis by enhancing TRAIL-R2 expression. *Cancer Biology & Therapy* vol 4, issue 10:31-39.



Caspase 6 FLICA™ Detection Kit

Cat.#	Reagent	Size	Fluorescence
95	FAM-VEID-FMK	25 tests	green
96	FAM-VEID-FMK	100 tests	green

1. Bedner, E., P. Smolewski, P. Amstad, and Z. Darzynkiewicz. 2000. Activation of caspases measured *in situ* by binding of fluorochrome-labeled inhibitors of caspases (FLICA): correlation with DNA fragmentation. *Exp Cell Res* vol 259:308-313
2. Grabarek, J., P. Amstad, and Z. Darzynkiewicz. 2002. Use of fluorescently labeled caspase inhibitors as affinity labels to detect activated caspases. *Human Cell* vol 15(1):1-12.
3. Grabarek, J., and Z. Darzynkiewicz. 2002. *In situ* activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.

Caspase 8 FLICA™ Detection Kit

Cat.#	Reagent	Size	Fluorescence
99	FAM-LETD-FMK	25 tests	green
910	FAM-LETD-FMK	100 tests	green

Guerin (BCG) results in the release of functional soluble TRAIL/Apo-2L. *Blood* vol 106(10):3474-3482

1. Grabarek, J., P. Amstad, and Z. Darzynkiewicz. 2002. Use of fluorescently labeled caspase inhibitors as affinity labels to detect activated caspases. *Human Cell* vol 15(1):1-12.
2. Grabarek, J., and Z. Darzynkiewicz. 2002. *In situ* activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.
3. Grunewald, S., Paasch, U., Said, T.M., Sharma, R.K., Glander, H.J., Agarwal, A. 2005. Caspase activity in human spermatozoa in response to physiological and pathological stimuli. *Fertility and Sterility* vol 83:1106-1112.
4. Kemp, T.J., Ludwig, A.T., Earel, J.K., Moore, J.M., VanOosten, R.L., Moses, B., Leidal, K., Nauseef, W.M. and Griffith, T.S. 2005. Neutrophil stimulation with *Mycobacterium bovis* bacillus Calmette-

Caspase 9 FLICA™ Detection Kit

Cat.#	Reagent	Size	Fluorescence
912	FAM-LEHD-FMK	25 tests	green
913	FAM-LEHD-FMK	100 tests	green

1. Grabarek, J., P. Amstad, and Z. Darzynkiewicz. 2002. Use of fluorescently labeled caspase inhibitors as affinity labels to detect activated caspases. *Human Cell* vol 15(1):1-12.
2. Grabarek, J., and Z. Darzynkiewicz. 2002. *In situ* activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.
3. Grunewald, S., Paasch, U., Said, T.M., Sharma, R.K., Glander, H.J., Agarwal, A. 2005. Caspase activity in human spermatozoa in response to physiological and pathological stimuli. *Fertility and Sterility* vol 83:1106-1112.

4. Paasch, U., Sharma, R.K., Gupta, A.K., Grunewald, S., Mascha, E.J., Thomas, A.J. Jr., Glander, H.J., and Agarwal, A. 2004. Cryopreservation and thawing is associated with varying extent of activation of apoptotic machinery in subsets of ejaculated human spermatozoa. *Biology of Reproduction* vol 71:1828-1837.

5. inner-Staines, B., VandenHoek, S. 2004. Using cryopreserved neuronal cells for multiwell neurotoxicity assays. Poster presented at the Society for Neuroscience October 2004 annual meeting.

6. Trummell, H.Q., Raisch, K.P., Seay, L.L., and Bonner, James, A. 2004. AKT activity following exposure to IMC-C225 alone, radiation alone or a combination of both treatments. Poster presented at the American Association for Cancer Research, March 27-31, 2004, abstract # 1293.

7. VanOosten, R.L., Moore, J.M., Karacay, B. Griffith, T.S. 2005. Histone deacetylase inhibitors modulate renal cell carcinoma sensitivity to TRAIL/Apo-2L-induced apoptosis by enhancing TRAIL-R2 expression. *Cancer Biology & Therapy* vol 4, issue 10:31-39.1.

8. Wang, Z., Goulet, R. 3rd, Stanton, K.J., Sadaria, M., and Nakshatri, H. 2005. Differential effect of anti-apoptotic genes Bcl-xL and c-FLIP on sensitivity of MCF-7 breast cancer cells to paclitaxel and docetaxel. *Anticancer Res* vol 25(3c):2367-2379.



Caspase 10 FLICA™ Detection Kit

Cat.#	Reagent	Size	Fluorescence
922	FAM-AEVD-FMK	25 tests	green
923	FAM-AEVD-FMK	100 tests	green

1. Grabarek, J., P. Amstad, and Z. Darzynkiewicz. 2002. Use of fluorescently labeled caspase inhibitors as affinity labels to detect activated caspases. *Human Cell* vol 15(1):1-12.
2. Grabarek, J., and Z. Darzynkiewicz. 2002. In situ activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.

FLISP™ Serine Protease Detection Kits

Cat.#	Reagent	Size	Fluorescence
945	FAM-PHE-CMK	25 tests	green
946	FAM-PHE-CMK	100 tests	green
949	FAM-LEU-CMK	25 tests	green
950	FAM-LEU-CMK	100 tests	green
963	FAM-SPACER-PHE-CMK	25 tests	green
964	FAM-SPACER-PHE-CMK	100 tests	green
965	FAM-SPACER-LEU-CMK	25 tests	green
966	FAM-SPACER-LEU-CMK	100 tests	green
967	FAM-LEU-DAP	25 tests	green
968	FAM-LEU-DAP	100 tests	green
951	SR101-PHE-CMK	25 tests	red
952	SR101-PHE-CMK	100 tests	red
955	SR101-LEU-CMK	25 tests	red
956	SR101-LEU-CMK	100 tests	red

1. Grabarek, J., and Darzynkiewicz, Z. 2002. In situ activation of caspases and serine proteases during apoptosis detected by affinity labeling their enzyme active centers with fluorochrome-tagged inhibitors. *Exp. Hematology* vol 30:982-989.
2. Grabarek, J., L. Du, G.L. Johnson, B.W. Lee, D.J. Phelps and Z. Darzynkiewicz. 2002. Sequential activation of Caspases and serine proteases (serpases) during apoptosis. *Cell Cycle* vol 1:124-131.
3. O'Connell, A.R., Holohan, C., Torriglia, A., Lee, B.F., and Stenson-Cox, C. 2006. Characterization of a serine protease-mediated cell death program activate in human leukemia cells. *Experimental Cell Research* vol 312: 27-39.
4. O'Connell, A.R., Lee, B.W., and Stenson-Cox, C. 2006. Capase-dependant activation of chymotrypsin-like proteases mediates nuclear events during Jurkat T cell apoptosis. *Biochem Biophys Res Commun* vol 345(2):608-616.

In Vivo FLIVO™ Apoptosis Detection Kit

Cat.#	Reagent	Size	Fluorescence
980	FAM-VAD-FMK	25 tests	green
981	FAM-VAD-FMK	100 tests	green
980	SR-VAD-FMK	25 tests	red
981	SR-VAD-FMK	100 tests	red

1. Griffin, R.J., Williams, B.W., Loren, M., Bischof, J.C., Olin, M., Lee, B.W., and Johnson, G. 2006. Novel use of highly specific poly-caspase inhibitor for in vivo detection of apoptosis in tumors treated with vascular targeting agents. Poster presented at the American Association for Cancer Research, April 2006.
2. Griffin, R., Williams, B.W., Olin, M., Lowen, M., and Song, C.W. 2005. Thermoradiotherapy enhancement with anti-vascular strategy. Poster presented at the Radiation Research Society, October 17, 2005.
3. Morrow, T., Paulson, E. October 16, 2006. Diabetes-induced allodynia: correlation between behavioral intensity, duration of diabetes, and periaqueductal gray (PAG) activation. Poster presented at the Society for Neuroscience annual meeting, October 2006.
4. Olin, M., Roy, S., Peterson, P., and Moliter, T. 2006. In vivo model for the detection of morphine-induced apoptosis. Poster presented at the Society of Neuroimmunology Pharmacology (SNIP), April, 2006.

1. Griffin, R.J., Williams, B.W., Loren, M., Bischof, J.C., Olin, M., Lee, B.W., and Johnson, G. 2006. Novel use of highly specific poly-caspase inhibitor for in vivo detection of apoptosis in tumors treated with vascular targeting agents. Poster presented at the American Association for Cancer Research, April 2006.

Order today! 800-829-3194



Cholinesterase Detection Kit

Cat.#	Reagent	Size	Fluorescence
973	Ph-F	25 tests	green
974	Ph-F	100 tests	green

- Huang, X., Lee, B. W., Johnson, G. L., Naleway, J., Guzikowski, A., Dai, W., Darzynkiewicz, Z. 2005. Novel assay utilizing fluorochrome-tagged physostigmine (Ph-F) to in situ detect active acetylcholinesterase (AchE) induced during apoptosis. *Cell Cycle* 4:1, 140-147.

Cytotoxicity Detection Kit

Cat.#	Reagents	Size	Fluorescence
969	CFSE, 7AAD, SR-FLICA	125 tests	green
970	CFSE, 7AAD, SR-FLICA	250 tests	green

- Olin, M. R., Choi, K. H., Lee, J., Molitor, T. 2005. Gamma delta t-lymphocyte cytotoxic activity against *Mycobacterium bovis* analyzed by flow cytometry. *Journal of Immunological Methods* vol 297.

Magic Red™ Caspase Detection Kit

Cat.#	Reagents	Size	Fluorescence
935	MR-(DEVD) ₂	25 tests	red
936	MR-(DEVD) ₂	100 tests	red

- Lee, B. W., Johnson, G. L., Hed, S. A., Darzynkiewicz, Z., Talhouk, J., Mehrotra, S. 2003. DEVdase detection in intact apoptotic cells using the cell permeant fluorogenic substrate, (z-DEVD)2-cresyl violet. *BioTechniques* vol. 35, no. 5: 1080-1085.

Magic Red™ Cathepsin Detection Kits

Cat.#	Reagents	Size	Fluorescence
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Cathepsin B Assay

937	MR-(RR) ₂	25 tests	red
938	MR-(RR) ₂	100 tests	red

Cathepsin K Assay

939	MR-(LR) ₂	25 tests	red
940	MR-(LR) ₂	100 tests	red

Cat.#	Reagents	Size	Fluorescence
941	MR-(FR) ₂	25 tests	red
942	MR-(FR) ₂	100 tests	red

- Creasy, B., Hartmann, C., Higgins White, F., and McCoy, K. 2006. New assay using fluorogenic substrates and immuno-fluorescence staining to measure cysteine cathepsin activity in live cell subpopulations. Not yet published.

Order today! 800-829-3194