

Yellow fluorescent protein TagYFP

- Bright yellow fluorescence
- Monomer with successful performance in fusions
- High pH stability and photostability
- Proven suitability to generate stably transfected cell lines
- Recommended for protein labeling

Description

TagYFP is a monomeric yellow fluorescent protein developed on the basis of GFP-like protein from jellyfish *Aequorea macrodactyla* (Xia *et al.*, 2002). TagYFP possesses single excitation maximum at 508 nm, and emission maximum at 524 nm. TagYFP is more pH stable than EYFP.

TagYFP is mainly intended for protein labeling in protein localization and interaction studies. It can also be used for cell and organelle labeling and for tracking the promoter activity, although TurboYFP and Phi-Yellow proteins are preferable for such applications because they mature faster and give brighter fluorescent signal.

Main properties of TagYFP

Characteristic	
Molecular weight	27 kDa
Polypeptide length	239 aa
Fluorescence color	yellow
Excitation max	508 nm
Emission max	524 nm
Quantum yield	0.62
Extinction coefficient	64 000 M ⁻¹ cm ⁻¹
Brightness*	39.7
Brightness % of EGFP	120
pKa	5.5
Structure	monomer
Aggregation	no
Maturation rate at 37°C	fast
Photostability	high

*Brightness is a product of extinction coefficient and quantum yield, divided by 1000.

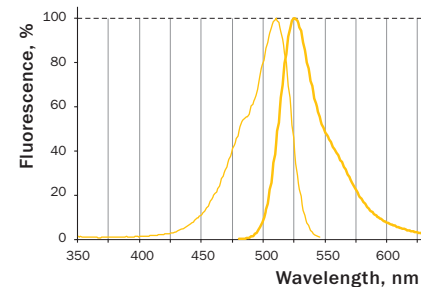
Performance and use

TagYFP can be easily expressed and detected in a wide range of organisms. Mammalian cells transiently transfected with TagYFP expression vectors give bright fluorescent signals within 10-12 hrs after transfection. No cell toxic effects and visible protein aggregation are observed.

TagYFP performance in fusions has been demonstrated in human cytoplasmic beta-actin and alpha-tubulin models.

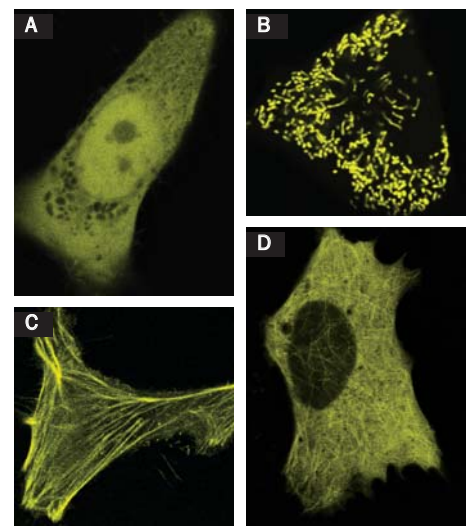
TagYFP suitability to generate stably transfected cells has been proven by Marinpharm company (www.marinpharm.com). Cell lines expressing TagYFP fusions are commercially available.

TagYFP can be used in multicolor labeling applications with cyan, green, red, and far-red fluorescent dyes.



TagYFP normalized excitation (thin line) and emission (thick line) spectra.

Complete TagYFP spectra in Excel format can be downloaded from the Evrogen Web site at www.evrogen.com/support/FP-tech.shtml



TagYFP expression in transiently transfected mammalian cells.

A — Confocal microscopy of HeLa cells expressing TagYFP; B — confocal microscopy of HeLa cells expressing mitochondria-targeted TagYFP; C — confocal microscopy of 3T3 cells expressing TagYFP fusion with the cytoplasmic beta-actin; D — confocal microscopy of 3T3 cells expressing TagYFP fusion with the alpha-tubulin.

Available variants and fusions

TagYFP codon usage is optimized for high expression in mammalian cells (Haas *et al.*, 1996), but it can be successfully expressed in many other heterologous systems.

TagYFP-mito fusion

A mitochondrial targeting sequence (MTS) is linked to the TagYFP N-terminus. MTS was derived from the subunit VIII of human cytochrome C oxidase (Rizzuto *et al.*, 1989; Rizzuto *et al.*, 1995). When expressed in mammalian cells, this variant provides yellow fluorescent labeling of mitochondria.

TagYFP-actin fusion

Human beta-actin is linked to the TagYFP C-terminus. When expressed in mammalian cells, this fusion provides yellow fluorescent labeling of actin filaments.

TagYFP-tubulin fusion

Human alpha-tubulin is linked to the TagYFP C-terminus. When expressed in mammalian cells, this fusion provides yellow fluorescent labeling of tubulin filaments.

Recommended filter sets and antibodies

Recommended Omega Optical filter sets for TagYFP are XF104-3 and XF105-2. It can also be detected using Chroma Technology corporation filter set 41028 Yellow GFP BP (10C/Topaz) or the similar.

The protein can be recognized using Anti-Tag(CGY)FP antibody (Cat.# AB121-AB122) available from Evrogen.

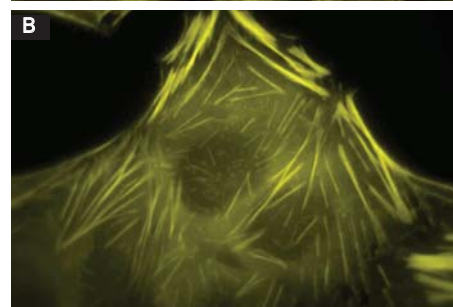
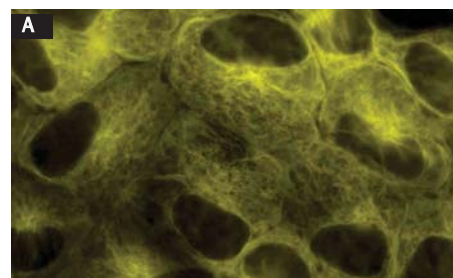
TagYFP licensing opportunities

Evrogen technology embodied in TagYFP is available for expanded and commercial use with an adaptable licensing program. Benefits from flexible and market-driven license options are offered for upgrade and novel development of products and applications. For licensing information, please contact Evrogen at license@evrogen.com.

TagYFP comprises the following amino acid substitutions as compared with wild-type *A. macrodactyla* GFP (AY013824): K3G, T9A, F64L, S65T, I68V, E76K, F99L, M128K, M153T, N144S, K162E, I167T, T203Y, A206D, T214A, F220L, F223S, F224V, G228S, K238R. It has 78% amino acid sequence identity with wild-type GFP from *A. victoria*.

References

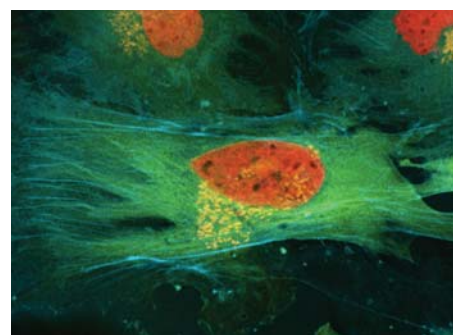
- Haas *et al.* (1996) *Curr. Biol.* 6: 315–324.
Rizzuto *et al.* (1989) *J. Biol. Chem.* 264: 10595–10600.
Rizzuto *et al.* (1995) *Curr. Biol.* 5: 635–642.
Xia *et al.* (2002) *Mar. Biotechnol.* 4(2): 155-162.



Expression of TagYFP fusions in stably transfected mammalian cells.

A — MDCK cells expressing TagYFP-tubulin fusion; B — U-205 cells expressing TagYFP-actin fusion.

Photographs of stably transfected cell lines were provided by Dr. Christian Petzelt (Marinpharm).



Multicolor labeling of mammalian cells.

TagCFP-actin fusion (blue), TagYFP-tubulin fusion (green), TTagFP635-H2B fusion (red), and Golgi-targeted TagRFP (orange).

TagYFP-related products

Product	Cat.#	Description	Size
TagYFP expression/source vectors			
pTagYFP-C	FP131	Mammalian expression vector encoding humanized TagYFP and allowing TagYFP expression and generation of fusions to the TagYFP C-terminus	20 µg
pTagYFP-N	FP132	Mammalian expression vector encoding humanized TagYFP and allowing TagYFP expression and generation of fusions to the TagYFP N-terminus	20 µg
pTagYFP-actin	FP134	Mammalian expression vector encoding humanized TagYFP fused with human cytoplasmic beta-actin	20 µg
pTagYFP-tubulin	FP135	Mammalian expression vector encoding humanized TagYFP fused with human alpha-tubulin	20 µg
pTagYFP-mito	FP137	Mammalian expression vector encoding humanized TagYFP fused with a mitochondria localization signal	20 µg
Recombinant protein			
rTagYFP	FP153	Recombinant yellow fluorescent protein	100 µg
Antibodies against TagYFP			
Anti-Tag(CGY)FP antibody	AB121	Rabbit polyclonal antibody against TagCFP, TagGFP,	100 µg
	AB122	TagYFP, and PS-CFP2	200 µg

Please contact your local distributor for exact prices and delivery information.

Third party products: stably transfected cell lines expressing TagYFP

Cell line	Source	Description
U-205-TAG-YFP actin	human	U-205 human osteosarcoma cells expressing TagYFP-actin fusion
MDCK cells with yellow fluorescent TAG-Tubulin	canine	Madin-Darby canine kidney epithelial cells (MDCK) expressing TagYFP-tubulin fusion

Cell lines are manufactured by Marinpharm GmbH (Berlin, Germany) under the Evrogen license. Please visit Marinpharm Web site at www.marinpharm.com for prices and delivery information.

Notice to Purchaser:

TagYFP-related products: These products are intended for research use only and covered by Evrogen Patents and/or Patent applications pending. By use of these products, you accept the terms and conditions of the applicable Limited Use Label License (available at www.evrogen.com/11.shtml).
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