

Red fluorescent protein TagRFP

- Bright red (orange) fluorescence
- Monomer with successful performance in fusions
- High pH stability
- Proven suitability to generate stably transfected cell lines
- Recommended for protein labeling

Description

TagRFP is a monomeric red fluorescent protein generated from the wild-type RFP from sea anemone *Entacmaea quadricolor* (Merzlyak *et al.*, 2007). It possesses bright fluorescence with excitation/emission maxima at 555 and 584 nm, respectively. TagRFP is about three times brighter than mCherry protein (Shaner *et al.*, 2004), which makes it the brightest monomeric red fluorescent protein available so far.

TagRFP is mainly intended for protein labeling. It can also be used for cell and organelle labeling and for tracking the promoter activity.

Main properties of TagRFP

Characteristic	
Molecular weight	27 kDa
Polypeptide length	237 aa
Fluorescence color	red (orange)
Excitation max	555 nm
Emission max	584 nm
Quantum yield	0.48
Extinction coefficient	100 000 M ⁻¹ cm ⁻¹
Brightness*	48.0
Brightness % of EGFP	145
pKa	3.8
Structure	monomer
Aggregation	no
Maturation rate at 37°C	fast
Photostability	medium

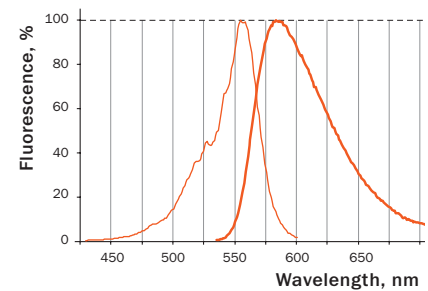
*Brightness is a product of extinction coefficient and quantum yield, divided by 1000.

Performance and use

TagRFP can be easily expressed and detected in a wide range of organisms. It becomes clearly detectable in mammalian cells as early as within 10-12 hrs after transfection. No cell toxic effects and visible protein aggregation are observed.

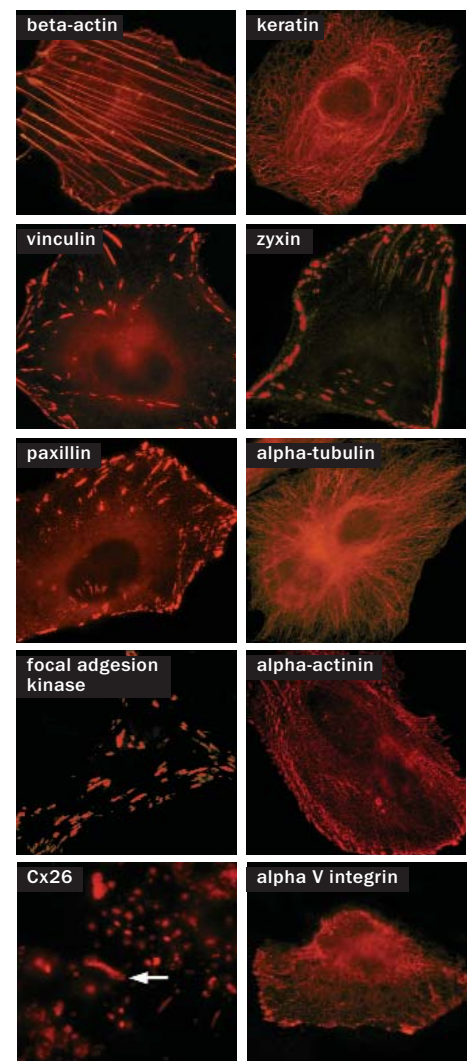
TagRFP performance in fusions has been demonstrated in fibrillar, vinculin, zyxin, beta-actin, alpha-tubulin, and other models.

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



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

Complete TagRFP spectra in Excel format can be downloaded from the Evrogen Web site at www.evrogen.com/TagRFP.shtml



TagRFP use for protein labeling.

Transient transfection of HeLa cells with TagRFP-tagged fusions. Images were kindly provided by Michael W. Davidson (Florida State University).

TagRFP can be used in multicolor labeling applications with other fluorescent proteins of cyan, green, yellow, and far-red colors.

Available variants and fusions

TagRFP 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.

TagRFP-mito fusion

A mitochondrial targeting sequence (MTS) is linked to the TagRFP 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 red fluorescent labeling of mitochondria.

TagRFP-actin fusion

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

TagRFP-tubulin fusion

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

Recommended filter sets and antibodies

Recommended Omega Optical filter sets are QMAX-Yellow, XF108-2, XF101-2, and XF111-2. TagRFP can also be detected using TRITC filter set or similar.

TagRFP can be recognized using Anti-tRFP antibody (Cat.# AB233-AB234) available from Evrogen.

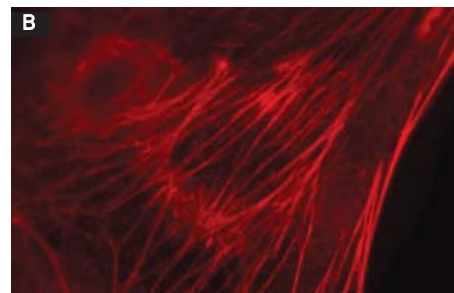
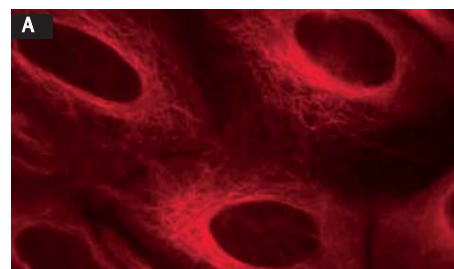
TagRFP licensing opportunities

Evrogen technology embodied in TagRFP 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.

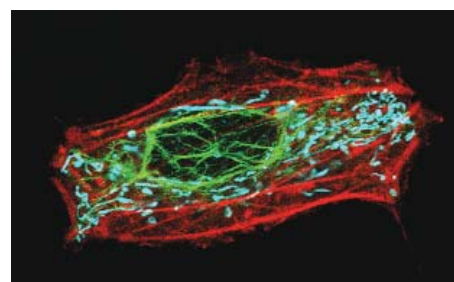
References

- Haas *et al.* (1996) *Curr. Biol.* 6: 315–324.
- Merzlyak *et al.* (2007) *Nat. Methods.* 4(7): 555-557.
- Rizzuto *et al.* (1989) *J. Biol. Chem.* 264: 10595–10600.
- Rizzuto *et al.* (1995) *Curr. Biol.* 5: 635–642.
- Shaner *et al.* (2004) *Nat. Biotechnol.* 12: 1567-1572.



Expression of TagRFP fusions in stably transfected U-205 mammalian cells.

A — TagRFP-tubulin fusion; B — TagRFP-actin fusion. Photographs of stably transfected cell lines were provided by Dr. Christian Petzelt (Marinpharm).



Multicolor labeling of mammalian cell.

TagRFP-actin fusion (red), mitochondria-targeted TagCFP (cyan); Dendra2-vimentin fusion (green).

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TagRFP-related products

Expression/source vectors	Cat.#	Description
pTagRFP-C	FP141	Mammalian expression vector encoding humanized TagRFP and allowing TagRFP expression and generation of fusions to the TagRFP C-terminus
pTagRFP-N	FP142	Mammalian expression vector encoding humanized TagRFP and allowing TagRFP expression and generation of fusions to the TagRFP N-terminus
pTagRFP-actin	FP144	Mammalian expression vector encoding humanized TagRFP fused with human beta-actin
pTagRFP-tubulin	FP145	Mammalian expression vector encoding humanized TagRFP fused with human alpha-tubulin
pTagRFP-mito	FP147	Mammalian expression vector encoding humanized TagRFP fused with mitochondria localization signal
Gateway® TagRFP-AS-C	FP148	Gateway® entry clone for generation of fusions to the C-terminus of TagRFP; transfer of the construct encoding TagRFP or its fusion into Gateway® destination vectors; TagRFP codon usage is optimized for expression in Arabidopsis and Saccharomyces
Gateway® TagRFP-AS-N	FP149	Gateway® entry clone for generation of fusions to the N-terminus of TagRFP; transfer of the construct encoding TagRFP or its fusion into Gateway® destination vectors; TagRFP codon usage is optimized for expression in Arabidopsis and Saccharomyces
pTagRFP-actinin	FP360	Mammalian expression vector encoding humanized TagRFP fused with human a-actinin
pTagRFP-integrin	FP361	Mammalian expression vector encoding humanized TagRFP fused with human a-V-integrin
pTagRFP-Cx26	FP362	Mammalian expression vector encoding humanized TagRFP fused with rat connexin 26
pTagRFP-Cx32	FP363	Mammalian expression vector encoding humanized TagRFP fused with human connexin 32
pTagRFP-Cx43	FP364	Mammalian expression vector encoding humanized TagRFP fused with rat connexin 43
pTagRFP-EB3	FP365	Mammalian expression vector encoding humanized TagRFP fused with human EB3 protein
pTagRFP-FAK	FP366	Mammalian expression vector encoding humanized TagRFP fused with chicken focal adhesion kinase
pTagRFP-Golgi	FP367	Mammalian expression vector encoding humanized TagRFP fused with human Golgi targeting sequence (GTS)
pTagRFP-H2B	FP368	Mammalian expression vector encoding humanized TagRFP fused with human histone H2B
pTagRFP-keratin	FP369	Mammalian expression vector encoding humanized TagRFP fused with human cytokeratin-18
pTagRFP-laminB1	FP370	Mammalian expression vector encoding humanized TagRFP fused with human lamin B1
pTagRFP-profilin	FP371	Mammalian expression vector encoding humanized TagRFP fused with mouse profilin
pTagRFP-vinculin	FP372	Mammalian expression vector encoding humanized TagRFP fused with human vinculin
pTagRFP-zyxin	FP373	Mammalian expression vector encoding humanized TagRFP fused with human zyxin

Antibodies against TagRFP	Cat.#	Description	Size
Anti-tRFP antibody	AB233	Rabbit polyclonal antibody against TagRFP, TagFP635,	100 µg
	AB234	TurboRFP, TurboFP602, and TurboFP635 proteins	200 µg

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