Green fluorescent protein TagGFP2

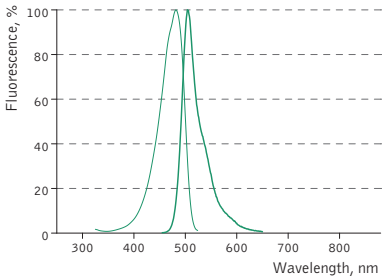
- Bright green fluorescence
- Monomeric protein with successful performance in fusions
- Fast maturation, high pH-stability and photostability
- Proven suitability to generate stably transfected cell lines
- Recommended for protein labeling and FRET applications

TagGFP2 (scientific name mTagGFP) is the improved variant of TagGFP, the mutant of the *Aequorea macrodactyla* GFP-like protein [Xia et al. 2002, Subach et al. 2008]. TagGFP2 possesses bright green fluorescence with excitation/emission maxima at 483 and 506 nm, respectively. TagGFP2 matures 1.6-fold faster than TagGFP and is characterized by the improved performance in fusions. Compared to EGFP, TagGFP2 provides about the same brightness of fluorescence but is significantly more pH stable. TagGFP2 is specially optimized for expression at 37°C.
Because of monomeric nature, TagGFP2 is mainly intended for protein localization studies and expression in long-term cell cultures. In FRET applications, TagGFP2 can be used as a donor for red fluorescent protein TagRFP or as an acceptor for blue fluorescent protein TagBFP.

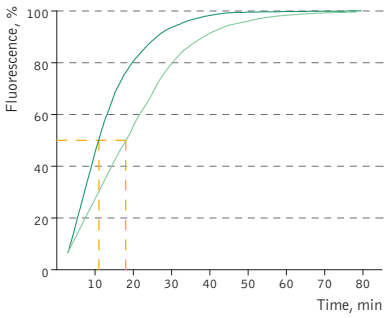
Main properties of TagGFP2

Characteristic	
Molecular weight, kDa	27
Polypeptide length, aa	238
Fluorescence color	green
Excitation maximum, nm	483
Emission maximum, nm	506
Quantum yield	0.6
Extinction coefficient, $M^{-1}cm^{-1}$	56 500
Brightness*	33.9
Brightness, % of EGFP	105
pKa	5.0
Structure	monomer
Aggregation	no
Maturation rate at 37°C	fast
Photostability	high
Cell toxicity	not observed

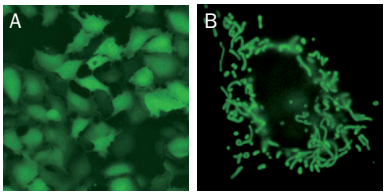
* Brightness is a product of extinction coefficient and quantum yield, divided by 1 000.



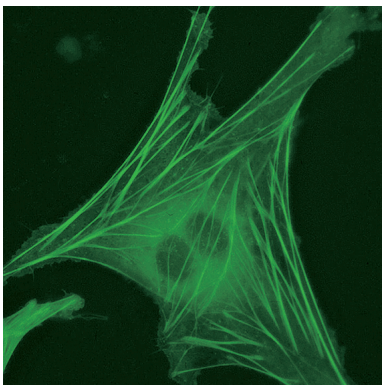
TagGFP2 normalized excitation (thin line) and emission (thick line) spectra.
Complete TagGFP2 spectra in Excel format can be downloaded from the Evrogen Web site at http://www.evrogen.com



Maturation curves for TagGFP2 and parental TagGFP. Color dashed lines indicate maturation half-times of 11 min and 18 min for TagGFP2 (dark green curve) and TagGFP (light green curve), respectively. Recording of protein maturation was started when about 7% from their maximal fluorescence has been detected. Time point "0" was defined using an approximation of the beginning of the maturation curves with straight lines. Data from Subach et al. 2008.



TagGFP2 expression in transiently transfected mammalian cells. (A) Transiently transfected HeLa cells expressing TagGFP2; (B) Transiently transfected HeLa cells expressing mitochondria-targeted TagGFP2.



Transiently transfected REF-52 cells expressing TagGFP2-tagged β-actin.

Performance and use

TagGFP2 can be easily expressed and detected in a wide range of organisms. Mammalian cells transiently transfected with TagGFP2 expression vectors produce bright fluorescence in 10-12 hrs after transfection. No cytotoxic effects or visible protein aggregation are observed.
TagGFP2 performance in fusions has been demonstrated in the β-actin, α-tubulin and mitochondria-targeting signal models. It can be used in multicolor labeling applications with blue, true-yellow, red, and far-red fluorescent dyes.

Recommended filter sets and antibodies

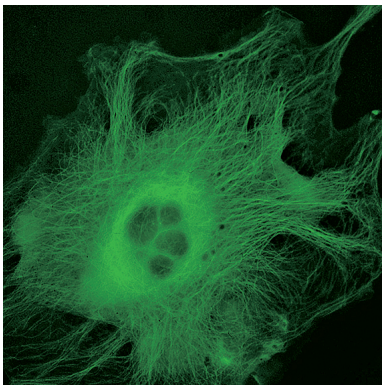
The protein can be recognized using Anti-Tag(CGY)FP antibody (Cat.# AB121-AB122) available from Evrogen.
TagGFP2 can be detected using common fluorescence filter sets for EGFP, FITC, and other green dyes. Recommended Omega Optical filter sets are QMAX-Green, XF100-2, XF100-3, (XF115-2), and XF116-2.

Available variants and fusions

TagGFP2 mammalian expression vectors contain TagGFP2 coding sequence with codon usage optimized for high expression in mammalian cells, i.e. humanized [Haas et al. 1996]. Humanized TagGFP2 can also be expressed in *E. coli* and some other heterological systems upon subcloning into appropriate vector.

The available vectors encoding TagGFP2 variants and fusions are listed below in the section TagGFP2-related products. For most updated product information, please visit Evrogen website www.evrogen.com.

If you need TagGFP2 codon variant or fusion construct that is not listed on our website, please contact us at product@evrogen.com.



Transiently transfected REF-52 cells expressing TagGFP2-tagged α-tubulin.

Licensing opportunities

Evrogen technology embodied in TagGFP2 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, J. et al. (1996). Curr Biol, 6 (3): 315–324 / pmid: 8805248

Subach, O.M. et al. (2008). Chemistry & Biology, 15 (10): 1116–1124 / pmid: 18940671

Xia, XY et al. (2002). Mar Biotechnol (NY), 4 (2): 155–162 / pmid: 14961275

TagGFP2-related products

Product	Cat.#	Description	Size
TagGFP2 expression/source vectors			
pTagGFP2-C	FP191	Mammalian expression vector encoding humanized TagGFP2 and allowing its expression and generation of fusions to the TagGFP2 C-terminus	20 μg
pTagGFP2-N	FP192	Mammalian expression vector encoding humanized TagGFP2 and allowing its expression and generation of fusions to the TagGFP2 N-terminus	20 μg
pTagGFP2-actin	FP194	Mammalian expression vector encoding humanized TagGFP2 fused with human cytoplasmic β-actin	20 μg
pTagGFP2-tubulin	FP195	Mammalian expression vector encoding humanized TagGFP2 fused with human α-tubulin	20 μg
pTagGFP2-H2B	FP196	Mammalian expression vector encoding humanized TagGFP2 fused with human histone H2B	20 μg
pTagGFP2-mito	FP197	Mammalian expression vector encoding humanized TagGFP2 targeted to mitochondria	20 μg
pTagGFP2-laminB1	FP199	Mammalian expression vector encoding humanized TagGFP2 fused with human lamin B1	20 μg
Antibodies against TagGFP2			
Anti-Tag(CGY)FP	AB121 AB122	Rabbit polyclonal antibody against TagCFP, TagGFP, TagGFP2, TagYFP, PS-CFP2, Case12, HyPer, and EGFP	100 μg 200 μg

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