

## Red fluorescent protein TurboFP602

- Bright true-red fluorescence
- Fast maturation
- High pH stability
- Proven suitability to generate stably transfected cell lines
- Optimized for common filter sets
- Recommended for gene expression analysis and cell labeling in autofluorescent environment

### Description

TurboFP602 is a red-shifted variant of the red fluorescent protein from sea anemone *Entacmaea quadricolor* (Merzlyak *et al.*, 2007). TurboFP602 possesses true-red fluorescence (with excitation/emission maxima at 574/602 nm, respectively), optimal for detection via most popular filter sets, and is easily distinguished from background signals. TurboFP602 exhibits fast maturation and high pH stability.

TurboFP602 is mainly intended for applications where fast appearance of true-red fluorescence is crucial. It is specially recommended for cell and organelle labeling and for tracking the promoter activity in autofluorescent tissues.

### Main properties of TurboFP602

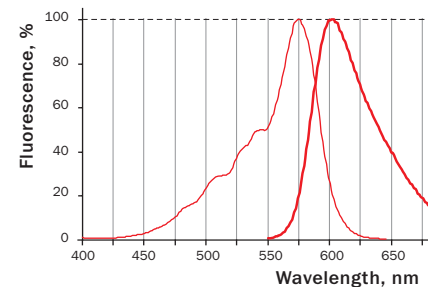
Characteristic	
Molecular weight	26 kDa
Polypeptide length	231 aa
Fluorescence color	true-red
Excitation max	574 nm
Emission max	602 nm
Quantum yield	0.35
Extinction coefficient	74 400 M <sup>-1</sup> cm <sup>-1</sup>
Brightness*	26.0
Brightness % of EGFP	79
pKa	4.7
Structure	dimer
Aggregation	no
Maturation rate at 37°C	fast
Photostability	medium

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

### Performance and use

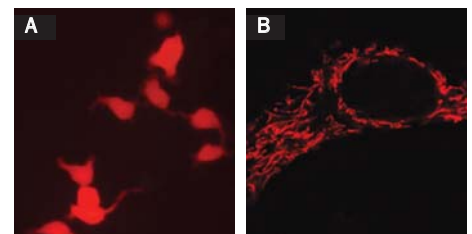
TurboFP602 can be expressed and detected in a wide range of organisms. Mammalian cells transiently transfected with TurboFP602 expression vectors give bright fluorescent signals within 8-12 hrs after transfection. No cell toxic effects and visible protein aggregation are observed.

Despite its dimeric structure, TurboFP602 demonstrates successful performance in fusions with subcellular localization signals and many cellular



### TurboFP602 normalized excitation (thin line) and emission (thick line) spectra.

Complete TurboFP602 spectra in Excel format can be downloaded from the Evrogen Web site at [www.evrogen.com/support/FP-tech.shtml](http://www.evrogen.com/support/FP-tech.shtml)



### TurboFP602 expression in transiently transfected cells.

A — Phoenix cells, whole cell expression;  
B — HeLa cells, mitochondria labeling.

proteins. However, we do not recommend using TurboFP602 for fusion with oligomerizing cellular proteins (e.g. alpha-tubulin). Please see section "Protein Localization Tags" (available at [www.evrogen.com/TagFPs.shtml](http://www.evrogen.com/TagFPs.shtml)) to select a reporter for such purposes.

TurboFP602 suitability to generate stably transfected cells has been proven by Marinpharm company ([www.marinpharm.com](http://www.marinpharm.com)). Cell lines expressing TurboFP602 are commercially available.

TurboFP602 can be used in multicolor labeling applications with cyan, green, yellow, and red (orange) fluorescent dyes.

### Available variants and fusions

TurboFP602 codon usage is optimized for high expression in mammalian cells (Haas *et al.*, 1996), but it can be successfully expressed in many other heterological systems.

### TurboFP602-mito fusion

A mitochondrial targeting sequence (MTS) is linked to the TurboFP602 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.

### Recommended filter sets and antibodies

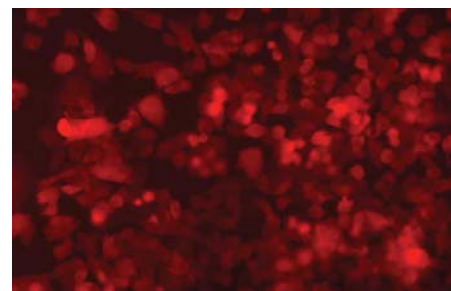
TurboFP602 can be detected using TRITC filter set or similar. Recommended Omega Optical filter sets are QMAX-Red and XF102-2.

TurboFP602 can be recognized using Anti-tRFP antibody (Cat.# AB231-AB232) available from Evrogen.

### TurboFP602 licensing opportunities

Evrogen technology embodied in TurboFP602 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](mailto:license@evrogen.com).



### Stably transfected human melanoma cell line Mel-Juso expressing TurboFP602.

Photograph of stably transfected cell line was provided by Dr. Christian Petzelt (Marinpharm).

### References

- Haas *et al.* (1996) *Curr. Biol.* 6: 315–324.
- Li *et al.* (1998) *J. Biol. Chem.* 273:34970-34975.
- 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.

## TurboFP602-related products

Product	Cat.#	Description	Size
<b>TurboFP602 expression/source vectors</b>			
pTurboFP602-C	FP231	Mammalian expression vector encoding humanized TurboFP602 and allowing TurboFP602 expression and generation of fusions to the TurboFP602 C-terminus	20 µg
pTurboFP602-N	FP232	Mammalian expression vector encoding humanized TurboFP602 and allowing TurboFP602 expression and generation of fusions to the TurboFP602 N-terminus	20 µg
pTurboFP602-B	FP233	Bacterial expression vector; source of humanized TurboFP602 coding sequence	20 µg
pTurboFP602-PRL	FP235	Promoterless mammalian expression vector encoding humanized TurboFP602 and designed for monitoring transcription from different promoters and promoter/enhancer combinations	20 µg
pTurboFP602-PRL-dest1	FP238	Promoterless vector encoding destabilized TurboFP602 and designed for monitoring transcription from different promoters and promoter/enhancer combinations	20 µg
pTurboFP602-dest1	FP239	Mammalian expression vector encoding destabilized TurboFP602 for its expression and generation of fusions to the TurboFP602-dest1 N-terminus	20 µg
pTurboFP602-mito	FP237	Mammalian expression vector encoding humanized TurboFP602 targeted to mitochondria	20 µg
<b>Recombinant protein</b>			
rTurboFP602	FP252	Recombinant red fluorescent protein TurboFP602	100 µg
<b>Antibodies against TurboFP602</b>			
Anti-tRFP antibody	AB231	Rabbit polyclonal antibody against TurboFP602, TagFP635, TurboFP602, TurboFP602, and TurboFP635 proteins	100 µg
	AB232		200 µg

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

## Third party products: stably transfected cell lines expressing TurboFP602

Cell line	Source	Description
Mel-Juso-FP602	human	Human metastasizing melanoma cell line Mel-Juso expressing TurboFP602 in cytosol

Cell lines are manufactured by Marinpharm GmbH (Berlin, Germany, [www.marinpharm.com](http://www.marinpharm.com)) under the Evrogen license.

### Notice to Purchaser:

TurboFP602-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/Evrogen-FP-license.shtml](http://www.evrogen.com/Evrogen-FP-license.shtml)).

CMV Promoter: The CMV promoter is covered under U.S. Patents 5,168,062 and 5,385,839, and its use is permitted for research purposes only. Any other use of the CMV promoter requires a license from the University of Iowa Research Foundation, 214 Technology Innovation Center, Iowa City, IA 52242.