

## Far-red fluorescent protein TurboFP635

- Bright far-red fluorescence
- Fast maturation
- High pH-stability and photostability
- Proven suitability to generate stably transfected cell lines
- Fluorescent signal is easily distinguished from background fluorescence
- Recommended for gene expression analysis and cell labeling inside of tissues

### Description

TurboFP635 (scientific name *Katushka*) is a far-red mutant of the red fluorescent protein from sea anemone *Entacmaea quadricolor* (Shcherbo *et al.*, 2007). Possessing excitation/emission maxima at 588/635 nm, TurboFP635 is 7 to 10-fold brighter compared to the spectrally close HcRed (Gurskaya *et al.*, 2001) or mPlum (Wang *et al.*, 2004). It is characterized by fast maturation and a high pH- and photo-stability. These unique characteristics make TurboFP635 the protein of choice for visualization within living tissues and dual-color high-throughput assays.

TurboFP635 is mainly intended for applications where fast appearance of far-red fluorescence is crucial. It is specially recommended for whole body imaging, cell and organelle labeling, and for tracking the promoter activity in auto-fluorescent tissues.

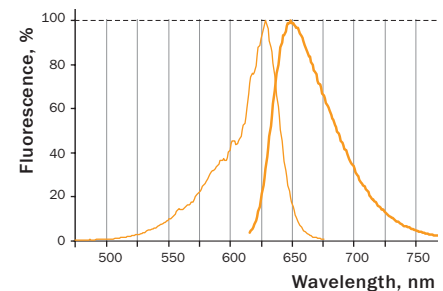
### Main properties of TurboFP635

Characteristic	
Molecular weight	26.3 kDa
Polypeptide length	231 aa
Fluorescence color	far-red
Excitation max	588 nm
Emission max	635 nm
Quantum yield	0.34
Extinction coefficient	65 000 M <sup>-1</sup> cm <sup>-1</sup>
Brightness*	22.1
Brightness % of EGFP	67
pKa	5.5
Structure	dimer
Aggregation	no
Maturation at 37°C	superfast
Photostability	high

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

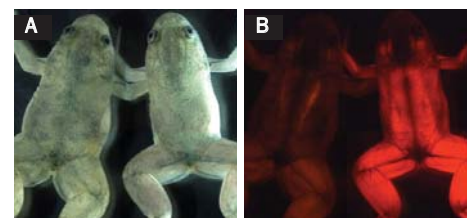
### Performance and use

TurboFP635 can be easily expressed and detected in a wide range of organisms. It can be easily visualized within living tissues. Mammalian cells transiently transfected with TurboFP635 expression vectors give bright fluorescent signals within 10-12 hours after transfection. No cell toxic effects and visible protein aggregation are observed.



### TurboFP635 normalized excitation (thin line) and emission (thick line) spectra.

Complete TurboFP635 spectra in Excel format can be downloaded from the Evrogen Web site at [www.evrogen.com/TurboFP635.shtml](http://www.evrogen.com/TurboFP635.shtml)



### DsRed-Express and TurboFP635 expression in *Xenopus laevis*.

Transgenic 2.5 months intact animals expressing TurboFP635 and DsRed-Express under the control of cardiac actin promoter are shown from the dorsal side. A — White light; B — fluorescence.

TurboFP635 (on the right) is excellently visible in the whole body, while DsRed-Express (on the left) can be hardly visualized. This experiment clearly demonstrates the advantage of longer wavelength emission of TurboFP635 for the whole body imaging. Leica MZFLIII fluorescent stereomicroscope, excitation filter 546/10; emission filter 565LP.

Image from Shcherbo *et al.*, 2007.

Despite its dimeric structure, TurboFP635 is suitable for generation of fusions; however, we recommend that you use specially optimized monomeric reporters for protein labeling applications.

TurboFP635 suitability to generate stably transfected cells has been proven by Marinpharm company ([www.marinpharm.com](http://www.marinpharm.com)). Various cell lines expressing TurboFP635 are commercially available.

TurboFP635 can be used in multicolor labeling applications with other fluorescent proteins from cyan to red (orange) colors.

#### Available variants and fusions

TurboFP635 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.

#### Recommended filter sets and antibodies

Recommended Omega Optical filter sets for TurboFP635 are QMAX-Red and XF102-2.

TurboFP635 can be recognized using Anti-tRFP antibody (Cat.# AB233-AB234) available from Evrogen.

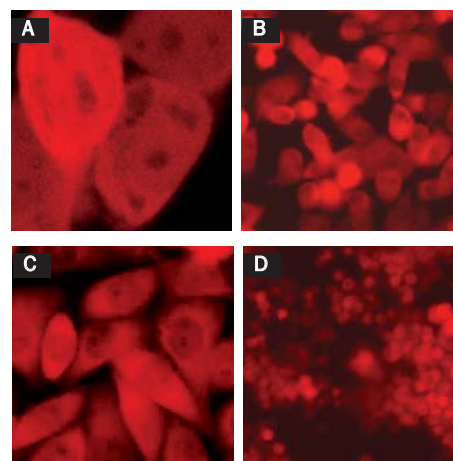
#### TurboFP635 licensing opportunities

Evrogen technology embodied in TurboFP635 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).

#### References

- Haas *et al.* (1996) *Curr. Biol.* 6: 315–324.  
Gurskaya *et al.* (2001) *FEBS Lett.* 507: 16-20.  
Shcherbo *et al.* (2007) *Nat. Methods* 4(9): 741 - 746.  
Wang *et al.* (2004) *Proc Natl Acad Sci U S A* 101: 16745-16749.



#### TurboFP635 expression in mammalian cells.

- A — Transiently transfected Phoenix cells;  
B-D — Stably transfected cells: B — human metastasizing melanoma line MelJuSo;  
C — T-24 human bladder carcinoma cells;  
D — WALKER 256 rat tumor cells.

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

## TurboFP635-related products

Product	Cat.#	Description	Size
<b>TurboFP635 expression/source vectors</b>			
pTurboFP635-C	FP721	C-terminal mammalian expression vector encoding humanized TurboFP635 and allowing TurboFP635 expression and generation of fusions to the TurboFP635 C-terminus	20 µg
pTurboFP635-N	FP722	N-terminal mammalian expression vector encoding humanized TurboFP635 and allowing TurboFP635 expression and generation of fusions to the TurboFP635 N-terminus	20 µg
<b>Antibodies against TurboFP635</b>			
Anti-tRFP antibody	AB233	Rabbit polyclonal antibody against TagRFP, TurboFP635,	100 µg
	AB234	TurboRFP, TurboFP602, and TurboFP635 proteins	200 µg

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

### Notice to Purchaser:

TurboFP635-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)).

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