maxFP™-Red description

maxFP-Red is a novel red fluorescent protein obtained by mutagenesis of Anthomedusae jellyfish chromoprotein [1]. maxFP-Red is a non-aggregating tag which successful performance in fusions was demonstrated. maxFP-Red properties make it an excellent reporter for broad applications in life science research and drug discovery.

maxFP-Red properties	
Molecular weight	27 kDa
Polypeptide length	242 AA
Fluorescence color	red[1]
Excitation max	584 nm
Emission max	610 nm
Quantum yield	0.20
Extinction coefficient	44000 ($M^{-1}cm^{-1}$)
Brightness[2]	8.8
Structure	Monomer[3]
pKa	5.0

[1]See Figure 1 for maxFP-Red excitation and emission spectra
[2]Brightness is a product of extinction coefficient and quantum yield, divided by 1000.
[3]maxFP-Red monomeric status was confirmed by gel-electrophoresis and successful maxFP-Red performance in fusions with actin and fibrillarin.

maxFP-Red advantages

› True red fluorescence (610 nm)
› Non-aggregating monomeric tag suitable for fusion construction

Possible limitations

Relatively fast photobleaching rate

maxFP-Red use

› Suitable for labeling in auto-fluorescent materials such as blood, plant tissues and marine organisms
› Suitable for fusion construction (successful performance in fusions with actin and fibrilarin was demonstrated)

Examples of use

1. Expression of maxFP-Red in mammalian cells.
HUVEC cells were nucleofected with a plasmid carrying maxFP-Red gene. The cells expressing maxFP-Red give bright fluorescent signal without visible aggregation. Fluorescence was clearly detected within 24 hours after transfection. No cell toxic effects were observed (Figure 2).

2. Expression of maxFP-Red-actin fusion in mammalian cells.
maxFP-Red was fused to cytoplasmic beta-actin (pmaxFP-Red-C vector was used for fusion construction). Transfection of HeLa cells with plasmids encoding this fusion resulted in red fluorescence revealed well-defined actin fibers. Fluorescence was clearly detected within 48 hours after transfection. No cell toxic effects were observed (Figure 3).

Figure 1. maxFP-Red excitation (green line) and emission (red line) spectra.

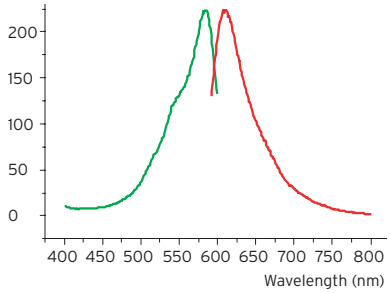


Figure 2. HUVECs were nucleofected with 2 µg pmaxFP-Red-C and analysed for maxFP-Red expression after 24 h.

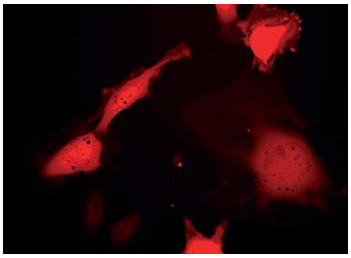
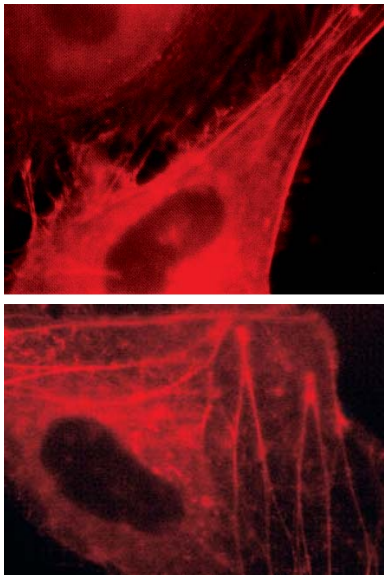


Figure 3. HeLa cells transiently transfected with a vector encoding maxFP-Red-actin fusion protein.



References
1. Shagin D.A., Barsova E.V., Yanushevich Y.G., Fradkov A.F., Lukyanov K.A., Labas Y.A., Ugalde J.A., Meyer A., Nunes J.M., Widder E.A., Lukyanov S.A. and Matz M.V.
GFP-like proteins as ubiquitous Metazoan superfamily: evolution of functional features and structural complexity.
Mol. Biol. Evol. 2004, 21(5):841-850.

maxFP-Red is equivalent to JRed (Evrogen).