

## Red fluorescent proteins JRed

- True-red fluorescence
- Proven suitability to create stably transfected cell lines

### Description

JRed is a red fluorescent protein obtained by mutagenesis of Anthomedusae jellyfish chromoprotein (Shagin *et al.*, 2002). JRed fluorescence can be detected using most popular filter sets.

### Main properties of JRed

| Characteristic         |   |
|------------------------|---|
| Molecular weight       | 27 kDa                                  |
| Polypeptide length     | 242 aa                                  |
| Fluorescence color     | true red                                |
| Excitation max         | 584 nm                                  |
| Emission max           | 610 nm                                  |
| Quantum yield          | 0.20                                    |
| Extinction coefficient | 44 000 M <sup>-1</sup> cm <sup>-1</sup> |
| Brightness*            | 8.8                                     |
| Brightness % of EGFP   | 26                                      |
| pKa                    | 5.0                                     |
| Structure              | dimer                                   |
| Aggregation            | no                                      |
| Maturation at 37°C     | slow                                    |
| Photostability         | medium                                  |

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

### Performance and use

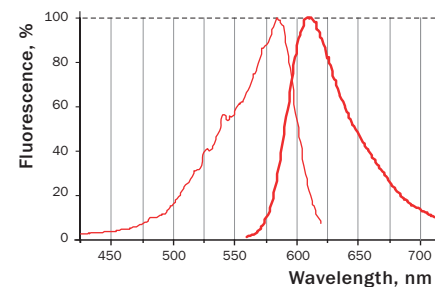
JRed can be expressed in eukaryotic cells; however, it is not appropriate for expression in prokaryotes.

Mammalian cells transiently transfected with JRed vector give red fluorescence without visible aggregation. Fluorescence is clearly detected within 24 hrs after transfection.

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

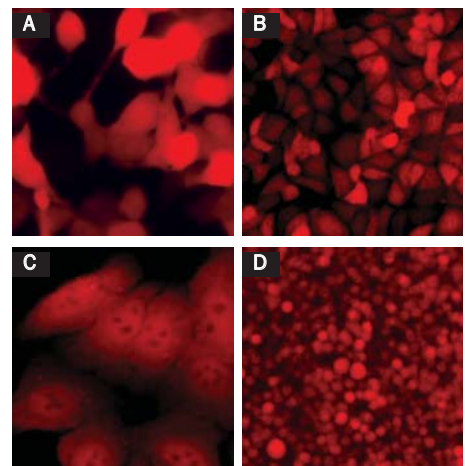
JRed possesses relatively fast photobleaching rate upon arc lamp irradiation. At the same time, it exhibits high photostability when excited by 543 nm laser line in a confocal microscope, with the photobleaching time several times longer compared with DsRed2. JRed could show phototoxicity when bleached.

Despite dimerization capacity, JRed demonstrates successful performance in fusions with subcellular localization signals and many cellular proteins including BH3 interacting domain death agonist (BID), nucleolar protein fibrillar, dopamin transporter (hDAT). However, we recommend that you use monomeric TagFPs for protein labeling applications. 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.



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

Complete JRed 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)



### Fluorescent microscopy of mammalian cells expressing JRed in cytosol.

A — Transiently transfected 293T cells; B — stably transfected T24 cells; C — stably transfected HeLa cells; D — stably transfected WALKER cells.

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

### Recommended filter sets and antibodies

JRed can be detected using TRITC filter set or similar. Recommended Omega filter sets are QMAX-Red and XF174.

JRed can be recognized using Anti-KillerRed antibody (Cat.# AB961-AB962) available from Evrogen.

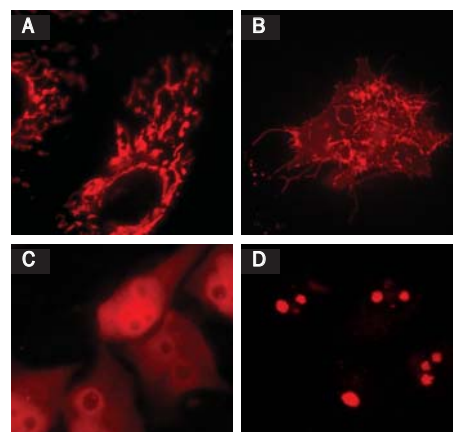
### JRed licensing opportunities

Evrogen technology embodied in JRed 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

Shagin *et al.* (2004) *Mol. Biol. Evol.* 21(5): 841-850.



### Fluorescent microscopy of mammalian cells expressing JRed fusions.

A — Mitochondria-targeted JRed in HeLa cells; B — JRed-hDAT fusion in PAE cells; C — JRed-BID fusion in HeLa cells; D — JRed-fibrillarin fusion in HeLa cells

## JRed-related products

| Product                               | Cat.# | Description  | Size   |
|---------------------------------------|-------|--|--------|
| <b>JRed expression/source vectors</b> |       |  |        |
| pJRed-C                               | FP701 | Mammalian expression vector encoding humanized JRed and allowing JRed expression and generation of fusions to the JRed C-terminus                            | 20 µg  |
| pJRed-N                               | FP702 | Mammalian expression vector encoding humanized JRed and allowing JRed expression and generation of fusions to the JRed N-terminus                            | 20 µg  |
| pJRed-PRL                             | FP705 | Promoterless expression vector encoding humanized JRed and designed for monitoring transcription from different promoters and promoter/enhancer combinations | 20 µg  |
| <b>Antibodies against JRed</b>        |       |  |        |
| Anti-KillerRed antibody               | AB961 | Rabbit polyclonal antibody against KillerRed and JRed  | 100 µg |
|                                       | AB962 |  | 200 µg |

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

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

| Cell line       | Source  | Description   |
|-----------------|---------|---|
| W-JR            | rat     | WALKER 256 rat tumor cells expressing JRed in cytosol   |
| PC-JR           | rat     | PC-12 rat pheochromocytoma expressing JRed in cytosol   |
| H-JR            | human   | HeLa human cervical carcinoma expressing JRed in cytosol  |
| T24-JR          | human   | T24 human bladder carcinoma expressing JRed in cytosol  |
| T406-JR         | human   | T406 human glioma expressing JRed in cytosol  |
| ARPE19-JR       | human   | ARPE19 human retina pigment cells expressing JRed in cytosol  |
| CHO-JR          | hamster | Chinese hamster ovary cells CHO-K1 expressing JRed in cytosol                                       |
| M3-JR           | mouse   | M3 mouse melanoma cells expressing JRed in cytosol  |
| C2-JR           | mouse   | C2C12 mouse myoblast cells expressing JRed in cytosol   |
| M3-JR-PY-Mito   | mouse   | Doubly transfected mouse melanoma M3 cells expressing PhiYFP in mitochondria and JRed in cytosol    |
| P-JR-Mito       | rat     | Rat kangaroo kidney epithelium PtK2 expressing JRed in mitochondria                                 |
| ARPE19-JR-Mito  | human   | ARPE19 human retina pigment cells expressing JRed in mitochondria                                   |
| H-JR-Mito       | human   | HeLa human cervical carcinoma expressing JRed in mitochondria                                       |
| T24-JR-Mito     | human   | T24 human bladder carcinoma expressing JRed in mitochondria   |
| M3-JR-Mito      | mouse   | Mouse melanoma M3 cells expressing JRed in mitochondria   |
| Fluorescent BID | human   | T24 human carcinoma cells expressing JRed in mitochondria and apoptotic protein TurboGFP-BID fusion |

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

### Notice to Purchaser:

JRed-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.