

DsRed-Express2: Ideal for Whole Cell Labeling

A red fluorescent protein engineered for advanced applications, such as stem cell research

- **High solubility**
- **Bright red**
- **Proven advantage in stem cell and other *in vivo* applications**

Clontech is now offering **DsRed-Express2 Vectors** encoding a version of DsRed-Express that has been engineered for use in sensitive cells, including stem cells, and for *in vivo* applications. Dr. Benjamin Glick and colleagues have engineered DsRed-Express2 to retain the fast maturation and high photostability of the original DsRed-Express, with increased solubility and cell viability (1). This allows for a considerably higher level of DsRed-Express2 protein in the cell, which in turn guarantees a higher level of fluorescence in the cell than the original DsRed-Express (see Figure 4 of Reference 2; i.e., page 29 of this issue). DsRed-Express2 exhibits strong and stable expression in bacterial and mammalian cells, with low cyto- and phototoxicity (1).

Designed for High solubility

DsRed-Express2 was created by modifying DsRed-Express via directed evolution of its protein surface, to reduce higher-order aggregation, which is postulated to cause cytotoxicity. It is as soluble as monomeric EGFP, which is a benchmark for low aggregation and successful *in vivo* applications (1, 2). DsRed-Express2 can be detected by DsRed antibodies (Figure 1).

Ideal performance in sensitive & stem cells

DsRed-Express2 is well-tolerated in bacterial and mammalian expression systems. It retains high fluorescence intensity and viability in HeLa cells, and has been successfully expressed in mouse hematopoietic stem cells over a ten-day period (1, 2, see page 29 of this issue).

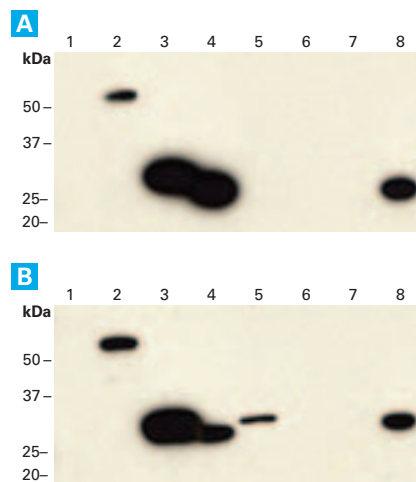


Figure 1. Western blot detection of DsRed-Express2. HEK 293 cells were transiently transfected with mammalian expression vectors encoding the indicated fluorescent proteins, and lysates from the equivalent of 35,000 cells/well were analyzed by Western blot using either DsRed Monoclonal Antibody* (1:500; **Panel A**) or DsRed Polyclonal Antibody (1:1,000; **Panel B**). Lane 1: Control (untransfected cells). Lane 2: tdTomato. Lane 3: mCherry. Lane 4: DsRed-Express. Lane 5: DsRed-Monomer. Lane 6: ZsGreen1. Lane 7: Empty. Lane 8: DsRed-Express2.

* Does not detect DsRed-Monomer

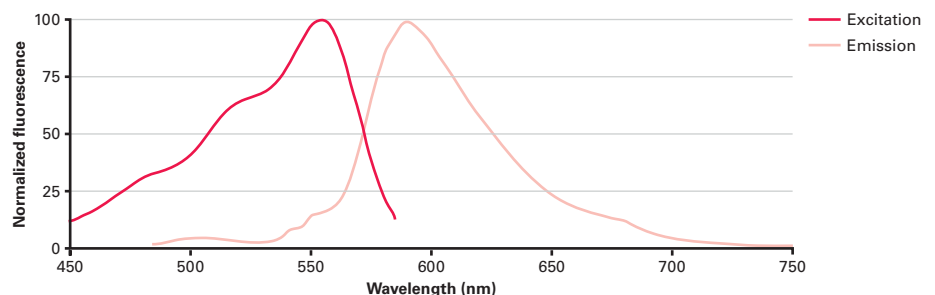


Figure 2. Fluorescence excitation and emission spectra of DsRed-Express2. Its excitation and emission maxima are 554 and 591 nm, respectively.

An Effective Label

DsRed-Express2 shows negligible cytotoxicity in bacteria, cell culture, and stem cells. Based on its robust performance, its brightness, and its red-shifted excitation and emission spectra (Figure 2), DsRed-Express2 will also be a valuable tool for monitoring transplanted cells

Product	Size	Cat. No.	
pDsRed-Express2 Vector	20 µg	632535	NEW!
pDsRed-Express2-1 Vector	20 µg	632536	NEW!
pDsRed-Express2-N1 Vector	20 µg	632537	NEW!
pDsRed-Express2-C1 Vector	20 µg	632538	NEW!
pCMV DsRed-Express2 Vector	20 µg	632539	NEW!
pIRES2 DsRed-Express2 Vector	20 µg	632540	NEW!
Living Colors DsRed Monoclonal Antibody	20 µl	632393	
	200 µl	632392	
Living Colors DsRed Polyclonal Antibody	100 µl	632496	

Related Products

- Lentiphos™ HT (Cat. No. 632151)
- Lenti-X™ HT Packaging System (Cat. Nos. 632160 & 632161)
- Lenti-X™ Expression System (Cat. No. 632164)

Notice to Purchaser

Please see the CMV Sequence, DsRed-Express & DsRed-Express2, and Living Colors® Fluorescent Protein Products licensing statements on page 40.

in live animals. Thus, DsRed-Express2 is the red fluorescent protein of choice for whole-cell labeling, even for delicate cell types.

References

1. Strack, R. L. *et al.* (2008) *Nature Meth.* 5(11):955–957.
2. Engineering DsRed-Express2 for Stem Cell Applications (January 2009) *Clontechiques* XXIV(1):28–30.