

## Technical Data Sheet

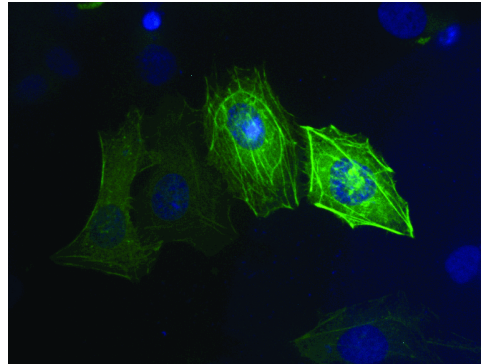
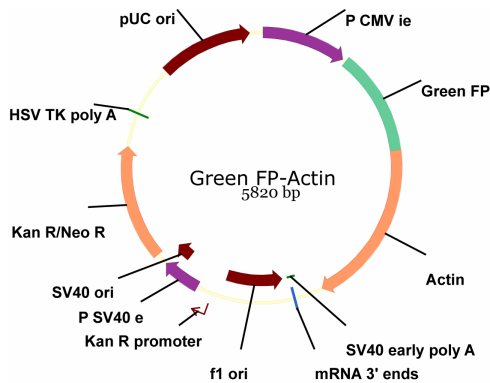
# Green FP Vector - Actin

### Product Information

<b>Material Number:</b>	<b>558721</b>
<b>Size:</b>	20 µg
<b>Concentration:</b>	0.5 mg/ml
<b>Storage Buffer:</b>	Aqueous buffered solution containing no preservative.

### Description

BD Pharmingen™ Green FP Vector - Actin is a mammalian expression vector that encodes a fusion of the green fluorescent protein (FP) from *Aequorea coerulea* with the human cytoplasmic β-actin. The human β-actin sequence is fused to the 3'-end of green FP. In order to increase the translation efficiency in mammalian cells, a Kozak consensus translation initiation site has been introduced to the 5'-end of the green FP open reading frame, and its sequence has been optimized with human codons. The green FP fusion is expressed under the control of the immediate early promoter of cytomegalovirus (P CMV ie), and its sequence is followed by downstream simian virus 40 (SV40) polyadenylation signals. The vector contains a neomycin resistance gene controlled by the SV40 promoter (P SV40 e) that allows selection of stably transfected eukaryotic cells using G418. An additional bacterial (Kan R) promoter drives the expression of the same gene encoding for kanamycin resistance in *E. coli*.



**LEFT:** Map of BD Pharmingen™ Green FP Vector - Actin. The sequence of the entire coding region of the fluorescent protein fusion was verified by DNA sequencing, and the vector sequence can be found on our Bioimaging Certified Reagents web page, [http://www.bdbiosciences.com/features/products/display\\_product.php?keyID=389](http://www.bdbiosciences.com/features/products/display_product.php?keyID=389).

**RIGHT:** Representative merged 40x confocal image of HeLa cells transiently transfected with BD Pharmingen™ Green FP Vector - Actin. The cells were transfected according to the Recommended Assay Procedure and fixed with BD Cytifix™ fixation buffer (Cat. No. 554655) for 10 minutes, washed 3 times with Phosphate Buffered Saline, and mounted on slides using Vectashield mounting medium containing DAPI (Vector Laboratories). The cells were imaged on a BD Pathway™ 855 Bioimager System. The Green FP Vector - Actin signal is pseudo-colored green, and DAPI is pseudo-colored blue.

### Preparation and Storage

Propagation in *E. coli*:

- *E. coli* replication origin: pUC19
- Copy number: ~500
- Selectable marker: kanamycin (50 mg/ml).
- f1 origin for single-stranded DNA production
- Suitable host strains: DH5a, HB101, and other general purpose strains. Single-stranded DNA production requires a host such as JM109 or XL1-Blue that contains an F plasmid.
- Plasmid incompatibility group: pMB1/ColE1

**Quality Control:** For verification, the vector/insert region of each vector lot is checked by DNA sequencing, and diagnostic restriction enzyme tests are performed. In addition, each lot must have a 260/280 absorbance ratio >1.7, >90% supercoiled DNA, and endotoxin level <0.1 EU/µg.

Store undiluted at -20°C.

### BD Biosciences

[bdbiosciences.com](http://bdbiosciences.com)

<b>United States</b>	<b>Canada</b>	<b>Europe</b>	<b>Japan</b>	<b>Asia Pacific</b>	<b>Latin America/Caribbean</b>
877.232.8995	888.268.5430	32.53.720.550	0120.8555.90	65.6861.0633	0800.771.7157

For country-specific contact information, visit [bdbiosciences.com/how\\_to\\_order/](http://bdbiosciences.com/how_to_order/)

Conditions: The information disclosed herein is not to be construed as a recommendation to use the above product in violation of any patents. BD Biosciences will not be held responsible for patent infringement or other violations that may occur with the use of our products. Purchase does not include or carry any right to resell or transfer this product either as a stand-alone product or as a component of another product. Any use of this product other than the permitted use without the express written authorization of Becton Dickinson and Company is strictly prohibited.

For Research Use Only. Not for use in diagnostic or therapeutic procedures. Not for resale.

BD, BD Logo and all other trademarks are the property of Becton, Dickinson and Company. ©2011 BD



## Application Notes

### Application

Flow cytometry	Tested During Development
Bioimaging	Tested During Development

### Recommended Assay Procedure:

Transfection methods should be optimized for individual cell lines and well formats.

### Transient transfection

1. Seed ~300,000 cells per well of 6-well plates on glass coverslips and culture overnight.
2. The next day transfect cells with 1 µg plasmid DNA per well using FuGENE® 6 Transfection Reagent (Roche Applied Science) according to the manufacturer's directions.
3. Cells can generally be used in experiments 24 - 48 hours post-transfection.

### Stable transfection

1. Seed ~300,000 cells per well in a 6-well plate and culture overnight.
2. The next day, transfect cells with 1 µg plasmid DNA per well using FuGENE® 6 Transfection Reagent (Roche Applied Science) according to the manufacturer's directions.
3. After 48 hours, replace medium with medium supplemented with 0.5 mg/ml G418.
4. Continue selection for approximately two weeks until colonies can be identified and isolated.

Note: Stable populations can be sorted or single-cell cloned by flow cytometry.

### Detection

BD Pharmingen™ Green FP Vector - Actin can be used for the localized expression of green FP in the actin filaments of mammalian cells. It allows the visualization of the actin filaments in living and fixed cells using fluorescence microscopy using FITC, GFP, or other equivalent filter sets. Green FP has an excitation maximum at 475 nm and emission maximum at 505 nm. Recommended filters for the BD Pathway™ instruments are:

<i>Instrument</i>	<i>Excitation</i>	<i>Emission</i>	<i>Dichroic</i>
<i>BD Pathway 855</i>	488/10	515 LP	Fura/FITC
<i>BD Pathway 435</i>	482/35	536/40	FF506

Green FP-expressing cells may be detected by flow cytometry using 488-nm excitation and the FITC detector with a 510/20 nm bandpass filter.

### Suggested Companion Products

<u>Catalog Number</u>	<u>Name</u>	<u>Size</u>	<u>Clone</u>
554655	Fixation Buffer	100 ml	(none)
353219	BD Falcon™ 96-well Imaging Plate	NA	(none)

### Product Notices

1. FuGENE, FuGENE-6, and FuGENE-HD are trademarks owned by Fugent LLC, and are protected by state, federal, and/or international trademark laws.
2. The product contained herein is covered under US patents 5,874,304, 5,786,464, and 5,795,737.

### References

Gurskaya NG, Fradkov AF, Pounkova NI, et al. A colourless green fluorescent protein homologue from the non-fluorescent hydromedusa *Aequorea coerulea* and its fluorescent mutants. *Biochem J.* 2003; 373(Pt 2):403-408. (Methodology)

Haas J, Park EC, Seed B. Codon usage limitation in the expression of HIV-1 envelope glycoprotein. *Curr Biol.* 1996; 6(3):315-324. (Methodology)

Kozak, M. An analysis of 5'-noncoding sequences from 699 vertebrate messenger RNAs. *Nucleic Acids Res.* 1987; 15(20):8125-8148. (Methodology)

Ponte P, Ng SY, Engel J, Gunning P, Kedes L. Evolutionary conservation in the untranslated regions of actin mRNAs: DNA sequence of a human beta-actin cDNA. *Nucleic Acids Res.* 1984; 12(3):1687-1696. (Biology)

Westphal M, Jungbluth A, Heidecker M, et al. Microfilament dynamics during cell movement and chemotaxis monitored using a GFP-actin fusion protein. *Curr Biol.* 1997; 7(3):176-183. (Methodology)

