genetransfer

Elevated Expression
Cell Line-Specific Lipids

Take your protein expression system to greater levels with HEKFectin™ and COSFectin™ cell line-specific lipids.

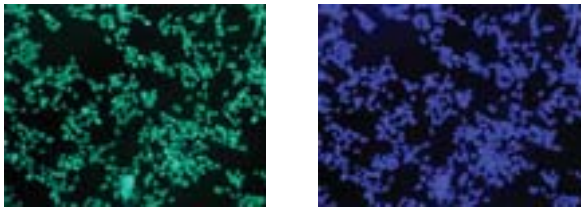
BIO-RAD

Maximum levels of protein expression

Bio-Rad's HEKFectin and COSFectin cell line-specific lipids will increase culture productivity for transient protein expression. For standard cultured cell lines, such as COS-7 and HEK 293T, remarkable increases in protein expression can be achieved in comparison to cultures transfected with a general transfection reagent.

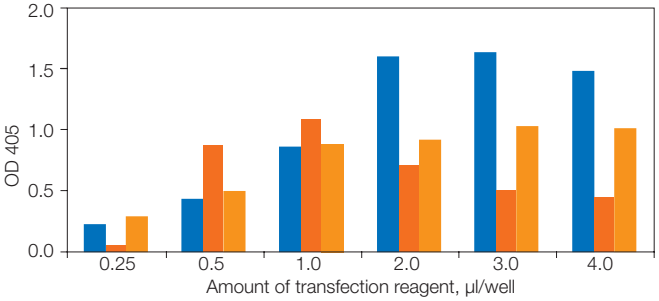
HEKFectin Lipid Reagent

This reagent was developed specifically for the transfection of HEK 293 cells. HEKFectin achieves excellent transfection efficiencies with both adherent and suspension HEK 293 cells, and has also been validated for use with many different 293 mutants. Although HEKFectin works well over a broad range of cell densities, the greatest levels of protein expression are achieved at densities from 70 to 90%.

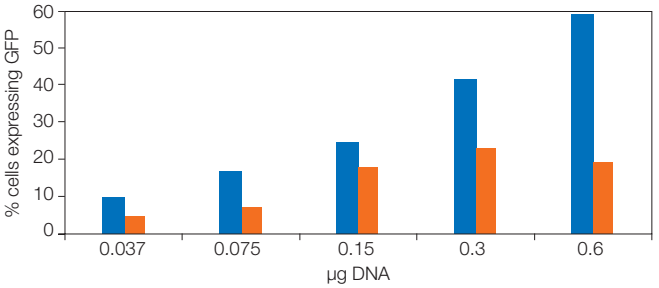


High-efficiency HEK 293 cell transfection. Cells were transfected with a plasmid that expresses a GFP-β-actin fusion protein. After 24 hr, cultures were imaged for the presence of GFP (left), then stained with Hoechst dye (right) and imaged. Note the high percentage of cells expressing GFP.

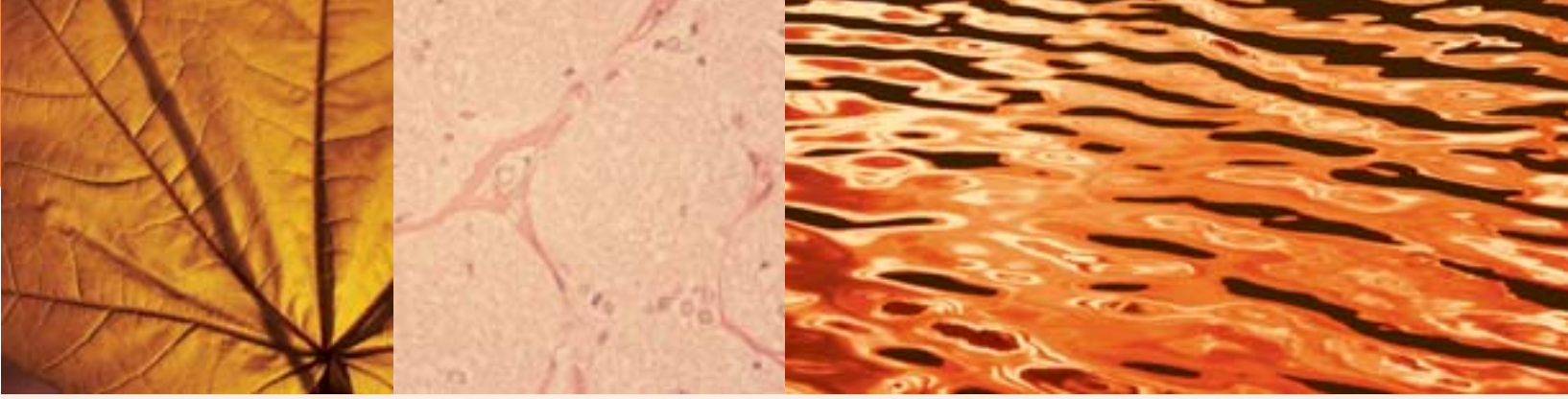
Use of these cell line-specific lipids results in highly productive cultures, because transient expression persists strongly for more than 7 days after transfection. This high productivity can reduce the number of transfections required to harvest desired levels of a protein.



High levels of protein expression in HEK 293 cells. Cells were transfected in 24-well plates with 0.25 µg pCMV.SPORT-β-gal (Invitrogen) using HEKFectin (■) or cell line-specific lipids from leading competitors (■,■). After 24 hr, cultures were assayed for β-galactosidase activity.



GFP expression in Phoenix cells. Phoenix (HEK 293) cells were transfected with increasing concentrations of a 1:1 mix of a gag/pol/env construct and MSCV-IRES-GFP DNA vector at 70% confluence in DMEM with 10% FBS using HEKFectin (■) or a competitor's cell line-specific lipid (■). After 24 hr, medium was removed, and fresh medium added. After 48 hr, HEK 293 cells were analyzed by flow cytometry for GFP expression. (Data courtesy of Dr Charles G Lo, University of California, San Francisco.)



Cell Line-Specific Transfection Reagents

COSFectin and HEKFectin are best suited for applications such as protein overexpression and viral production. The blended transcriptional enhancer boosts expression to exceptional levels, elevating culture productivity and reducing cost per mg of protein. These lipids have been validated for the following cell lines using both adherent and suspension phenotypes:

HEKFectin	**COSFectin**
HEK 293	COS-1
293H	COS-3
293T	COS-7
293F	
293 Phoenix	

Advantages

Outstanding efficiency — typical efficiencies range from 90 to 99%

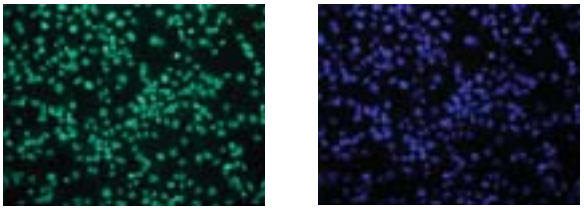
Low cytotoxicity — increased expression levels due to excellent culture health

Flexibility — works great with or without serum and at densities of 50–90%

Fast — optional rapid protocol reduces time to harvest by 24 hr

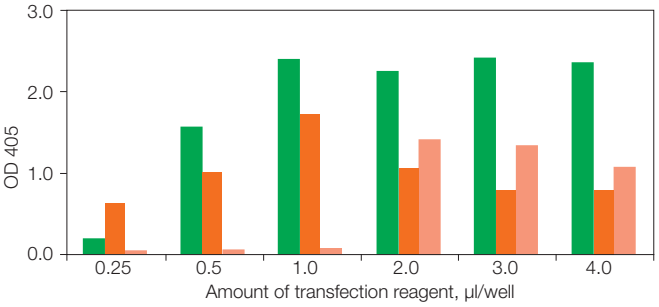
COSFectin Lipid Reagent

This lipid reagent was designed and screened specifically for high-efficiency COS cell transfection. COSFectin consistently yields efficiencies from 90 to 95% with low cytotoxicity, resulting in exceptional levels of protein expression. This lipid has been successfully tested with COS-7, COS-1, and COS-3 variants.

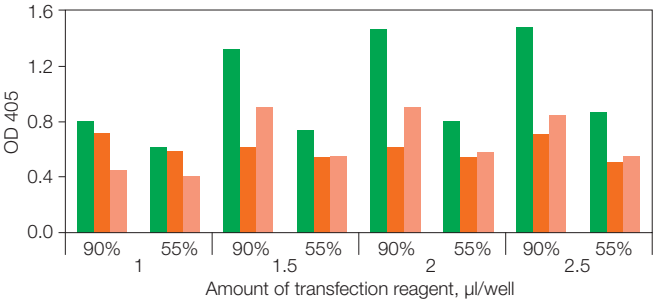


High-efficiency transfection of COS-7 cells. Cells were transfected with a plasmid that expresses a GFP-tubulin fusion protein. After 24 hr, cultures were imaged for the presence of GFP (left), then stained with Hoechst dye (right) and imaged. Note the high percentage of cells expressing GFP.

While maximum levels of protein expression can be achieved at densities of 70–90% using serum-containing media, COSFectin works exceptionally well in the absence of serum and at culture densities as low as 50%.



High levels of protein expression in COS-7 cells. Cells were transfected in 24-well plates with 2 µg pCMV.SPORT-β-gal using COSFectin (■), a competitor's cell line-specific lipid (■), and a general transfection reagent (■). After 24 hr, cultures were assayed for β-galactosidase activity.



Protein expression at different culture confluences. COS-7 cells were transfected with a β-galactosidase reporter plasmid at confluences of 90% or 55%, using either COSFectin (■) or a competitor's general transfection reagent (■,■). After 48 hr, cells were lysed and assayed for β-galactosidase activity. (Data courtesy of Dr Sean Baker, Oregon Health and Science University.)

Ordering Information

Catalog #	Description
HEKFectin Cell-Specific Lipid	
170-3380	HEKFectin Cell-Specific Lipid, for the transfection of HEK 293 cells and subclones, 0.5 ml
170-3381	HEKFectin Cell-Specific Lipid, 1.0 ml
170-3382	HEKFectin Cell-Specific Lipid, 5 x 1.0 ml
COSFectin Cell-Specific Lipid	
170-3370	COSFectin Cell-Specific Lipid, for the transfection of COS cells and subclones, 0.5 ml
170-3371	COSFectin Cell-Specific Lipid, 1.0 ml
170-3372	COSFectin Cell-Specific Lipid, 5 x 1.0 ml

Related Bulletins and Technical Notes

Bulletin #	Title
2873	TransFectin™ Lipid Reagent Brochure
3105	siLentFect™ Lipid Reagent Flier
3197	Optimization of TransFectin Lipid Reagent-Mediated Transfection for Different Cell Types
5226	Highly Efficient Transfection of Mouse ES Cells With TransFectin Lipid Reagent

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Related Products and Information

Lipid Transfection
Liposomal transfection provides researchers with a powerful yet cost-effective way to introduce nucleic acids into a broad range of mammalian cell lines. This technology uses cationic lipids to bind or "complex" with nucleic acids, producing a condensed macromolecule that is delivered to the cell. Bio-Rad has a family of lipid reagents for general use as well as for specialized applications such as RNAi and protein expression.

Competent Cells
The most commonly used competent cells are genetically modified *E. coli* strains. While these cells have genetic characteristics that support routine cloning applications, they do not naturally take up DNA. These cells can be made competent by either chemical/heat shock treatment or electroporation methods. Bio-Rad's EP-Max™ electro-competent and C-Max™ chemi-competent cells provide researchers with the highest-efficiency competent cells. EP-Max cells complement Bio-Rad's high-quality electroporation cuvettes and electroporation instruments, ensuring both consistency and high efficiency in bacterial transformations.

Biolistics
Biolistic technology, or particle bombardment, is a direct physical method of delivering nucleic acids or other molecules into cells. The Helios® gene gun and the PDS-1000/He™ systems provide easy-to-use, rapid, versatile gene delivery that is independent of cell type, requires small amounts of DNA, and requires few cells. This technology can be applied in vivo or in vitro to the widest range of targets, including cell cultures, tissues, organs, plants, and animals. These instruments effectively use a helium pulse to accelerate high-density gold or tungsten particles, coated with nucleic acids, directly into the target cells.

Electroporation
Electroporation is a highly efficient technique for introducing nucleic acids, proteins, and other molecules into a wide variety of cells. The Gene Pulser Xcell™ electroporator is a flexible, modular system that delivers exponential or square-wave pulses optimal for your cell type. With an intuitive interface, fully manual setting, preset programs, and "optimize" capability, the Gene Pulser Xcell electroporator provides power and reliability. For more routine high-throughput bacterial or fungal applications, the MicroPulser™ electroporator provides simple, efficient, reproducible delivery.

BIO-RAD

Bio-Rad Laboratories, Inc.

Life Science Group

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